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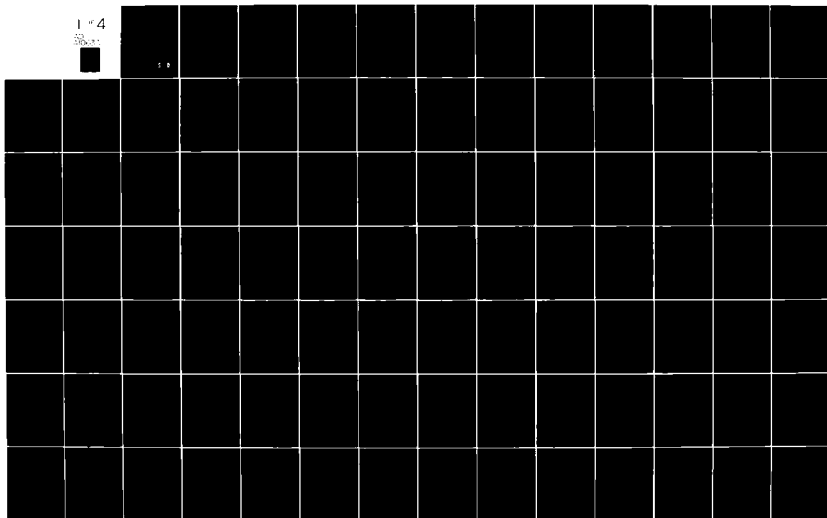
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STIMULATING RHETORICAL INVENTION IN ENGLISH COMPOSITION
THROUGH COMPUTER-ASSISTED INSTRUCTION

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1979

To Mary

STIMULATING RHETORICAL INVENTION IN ENGLISH COMPOSITION
THROUGH COMPUTER-ASSISTED INSTRUCTION

by

HUGH LEE BURNS, JR., A.A., A.B., M.A.

DISSERTATION

Presented to the Faculty of the Graduate School of
The University of Texas at Austin
in Partial Fulfillment
of the Requirements
for the Degree of

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Finally, to Mary, Katrina, Ann, Elizabeth:
without you, ladies, all my merry jigs are for naught.

STIMULATING RHETORICAL INVENTION IN ENGLISH COMPOSITION
THROUGH COMPUTER-ASSISTED INSTRUCTION

Publication No.

Hugh Lee Burns, Jr., Ph.D.
The University of Texas at Austin, 1979

Supervising Professors: Charles R. Kline, Jr.
George H. Culp

The impulse for this research was to combine the renewed interest in teaching invention--the process of exploring a subject to discover ideas or arguments--with the developing technology of instructional computing. The first of three major conclusions was that "open-ended" or exploratory, supplementary computer-assisted instruction (CAI) which encouraged growth in the number and the sophistication of ideas could be programmed. The second conclusion was that a systematic inquiry using one of three popular heuristic methods made the experimental groups more alike with respect to the quantity and quality of their ideas and significantly different ~~(p=0.0001)~~ from a control group. →

The third conclusion was that the computer-administered, posttest methodology represented a more stringent way for controlling and later replicating quasi-experimental research in rhetoric.

The three heuristic strategies selected for the CAI modules were Aristotle's enthymeme topics, Burke's dramatistic pentad, and the Young, Becker, and Pike tagmemic matrix. Sixty-nine students in four freshman composition courses participated in the experiment.

Hypotheses concerning quantity of ideas found that (1) significant individual gains ($p < .001$) occurred within each experimental group while the control group members experienced a significant decrease ($p < .02$), and (2) no significant difference occurred among the heuristic groups while a significant difference ($p = .000$) was found among the four groups. Hypotheses concerning quality found that (1) individuals in all four groups achieved gains, though those in the control group lagged behind the gains experienced by the members of the experimental groups, and (2) a significant difference ($p = .000$) favored the experimental groups in insightfulness, comprehensiveness, intellectual processing, and overall quality. A significant difference ($p = .037$) was discovered concerning the elaboration rates--the topoi method being the most

x

likely to sustain an inquiry and the Burke pentad being the least likely. No significant difference appeared among groups with respect to the arrangement of composition plans or to the internalization of heuristic strategies. Finally, students strongly agreed that these CAI-invention modules made them think systematically about their own writing process.

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CHAPTER 1

A Problem to Find, A Problem to Prove

"A reasonable sort of heuristic cannot aim at unfailing rules; but it may endeavor to study procedures (mental operations, moves, steps) which are typically useful in solving problems. Such procedures are practiced by every sane person sufficiently interested in his problem. They are hinted by certain stereotyped questions and suggestions which intelligent people put to themselves and intelligent teachers to their students. A collection of such questions and suggestions, stated with sufficient generality and neatly ordered, may be less desirable than the philosophers' stone but can be provided.
--G. Polya

The Problems

Within recent years, many English composition teachers have returned to a fuller rhetorical model for teaching writing. Consequently, they have searched for methods of stimulating invention, the first rhetorical art, in their composition courses. Invention, from the Latin inventio, or heuristic, from the Greek heuresis, is the process of exploring a subject to discover ideas, arguments, or propositions--those features which one must know in order to write convincingly about a subject.

Richard Young, in his bibliographical essay entitled "Invention: A Topographical Survey," (1976) describes the process this way:

Every writer confronts the task of making sense of events in the world around him or within him--discovering ordering principles, evidence which justifies belief, information necessary for understanding--and of making what he wants to say understandable and believable to particular readers. He uses a method of invention when these processes are guided deliberately by heuristic procedures, that is, explicit plans for analyzing and searching which focus attention, guide reason, stimulate memory and encourage intuition. (p. 1)

Since all writers must discover suitable, factual, and interesting information, acquiring specific methods of inquiry, or heuristic strategies, ought to make them

more efficient early in the writing process. This efficiency refers not only to the rate of gathering or discovering ideas, but also to the quality of those ideas--their insightfulness, their comprehensiveness, and their usefulness.

An ancient Arabian anecdote, as retold by Robert E. Ornstein in The Psychology of Consciousness (1972), illustrates the common dilemma writers face when they begin writing before having thought through their unique writing problem:

A man saw Nasrudin searching for something on the ground.

"What have you lost, Mulla?" he asked.

"My key," said the Mulla.

So the man went down to his knees too, and they both looked for it.

After a time, the other man asked: "Where exactly did you drop it?"

"In my own house."

"Then why are you looking here?"

"There is more light here than inside my own house." (p. 187)

All writers at some time have shared Nasrudin's predicament. Like Nasrudin, students often feel obliged to look outside where the light is, even though they suspect, sometimes even know, that what they are looking for is not outside in the light but inside in the dark. It is not necessarily bad for them to use outside light, but they must first be taught to bring the light into their own houses. Stimulating invention in English

composition is only a means toward this homecoming, for learning invention strategies facilitates fruitful discoveries. While any discovery is worthwhile, the process of discovering what to say can be the result of planning and conscious effort, not just the result of random luck and happenstance collisions of mind and matter.

Certainly, English instructors are well aware of students' pleas for help when it comes time for them to select their composition topics. Moreover, most instructors recognize that nothing should be more individualized than each student's respective exploration of a subject. This concern for developing and nurturing the thinking expertise of student writers is not always adequately demonstrated in the classroom, however.

Although the Dewey problem solving steps were once common fare in many English texts, today problem solving techniques or heuristic strategies are not often systematically taught in most secondary and college English curricula. Not that instructors have assumed that students have mastered ways to inquire about subjects and to explore many potential ideas: it is rather that they are not sure how best to nurture systematic inquiry.

This problem anticipates the major assumption for developing supplementary instruction in invention: namely invention, prewriting, or "thinking about a topic" are ideas English teachers often use recklessly in the composition classroom. The primary cause for this recklessness may be not providing the students with explicit methods of inquiry, and the primary effect, again, may be students' pleas for help: "I don't know what to write about!" "I guess it's just not a very good topic!" or "What can I say about it, do you think?" Granted, a teacher cannot teach insight--what ultimately must be the student's own personal, quite private journey toward understanding--and obviously, composition instructors cannot predict what the students will discover. Nevertheless, they can prompt students to make discoveries. They can provide systematic strategies or procedures. Again, Richard Young describes certain aspects of the invention process which can be taught:

The procedures themselves can be taught, as can their use in conscious thought; but one cannot teach direct control of the imaginative act or the unanticipated outcome. What can be taught is not, however, trivial; no one would question the importance of careful thought in the composing process. Furthermore, the use of heuristic procedures can coax imagination and memory; the intuitive act is not absolutely

beyond the writer's control; it can be nourished and encouraged. (pp. 1-2)

Nourishing and encouraging intuitive acts as well as coaxing students' imaginations and memories are most certainly activities which reach far beyond the English composition classroom. Such are the problems composition teachers must prove in teaching invention.

The First Proposition

The remedy, as already suggested, is to teach explicit methods of inquiry, particularly those constant features of heuristic systems. Such a suggestion, of course, is not novel. Plato advocated explicit strategies for inquiry, as when Socrates tells Phaedrus:

Isn't this the way to reflect about the nature of anything? First, is it simple or complex, this knowledge about which we shall wish to have scientific knowledge ourselves and be able to produce it in others? Next, if it is simple, we must investigate what capacity it may have in its own nature to act on something correlate to it, and what is that something? And what capacity does it have for being affected by a correlate, and what correlate may this be? Or if it's complex, we must count its parts and notice in the case of each of them what we observe in the case of the simple object, applying to each part the questions: on what is its nature to act? By what is it affected? What is the nature of this affection? . . . At any rate, any other procedure would be like

blind man's progress. And to be sure, no scientific inquirer should have any resemblance to the blind or to the deaf. (Phaedrus, 1956, pp. 61-62)

Nor has Plato been alone in stressing the importance or supremacy of systematic inquiry. Descartes' fourth rule for the direction of the mind puts the matter simply--"There is need of a method for finding out the truth" ("Rules for the Direction of the Mind," 1969, p. 44). John Dewey finds scrupulous investigations pleasurable:

A disciplined mind takes delight in the problematic, and cherishes it until a way out is found that approves itself upon examination. . . . The scientific attitude may almost be defined as that which is capable of enjoying the doubtful; scientific method is, in one aspect, a technique for making a productive use of doubt by converting it into operations of definite inquiry. (The Quest for Certainty, 1960, p. 228)

Heeding such advice, therefore, let us ask, "what is the nature of invention?"

Excluding the insight, there should be relatively few surprises in invention, for the static construct in invention, and in heuristics generally, is the system. Frank J. D'Angelo (1975) correctly insists that "invention always seems to take place within a system" (p. 53). He elaborates:

There is always some kind of structure underlying the process. To invent is to extend a system which is already present in the mind. . . .

The subconscious mind usually provides the design for the composing process, and the conscious mind provides its development, although the reverse is possible. Actually, this is an oversimplification since there is a constant interplay between two modes of consciousness. Since the subconscious part of the mind is not always accessible, the writer must aid the subconscious as much as possible by a deliberate and conscious effort, by defining the problem, by filling in the details, by carefully working out the design, in brief, by preparing the mind so that the subconscious can take over. The old truism that invention favors the well prepared mind seems to be an accurate one. (p. 53)

Indeed, what can be taught are the systems themselves, then, additionally, extending the systems, combining the systems, and generating other personal systems. Since freshman writers might not have articulated their conscious systems of inquiry, composition teachers might begin by teaching some of the more well-known heuristic systems. This assumption suggests that freshman composition students can be taught "non-data conditioned" heuristics so that they can be originally and consciously aware of at least one particular method of inquiry. Thus, with such considerations, this research problem was half-delineated: composition teachers interested in grounding their research on current rhetorical theory

and in teaching systematic procedures for thinking must first understand the nature of invention and then design, test, and evaluate invention instruction.

The Second Proposition

The second half of the problem grew partly out of a methodological difficulty of isolating and collecting each individual's actual thinking process and partly from a fascination with the emerging technology of computer-assisted instruction (CAI)--specifically, the possible implications which research in individualized instructional systems, artificial intelligence, and man-machine problem solving could have on the teaching of rhetoric. In recent testimony about computers and the learning society before the Subcommittee on Domestic and International Scientific Planning, Analysis and Cooperation of the Committee on Science and Technology (1978), one recurring theme, here enunciated by John S. Brown of Bolt, Beranek, and Newman, was integrating the computer as a cognitive tool in education: "The unique quality of the computer that does make possible a revolution is that it can serve as a cognitive tool. It can be an active agent--a servant, assistant, consultant or coach--in a way that books and

television cannot" (p. 300). Composition teachers and rhetoricians certainly used such passive cognitive tools as books and television, but virtually no rhetorical instruction or research had anticipated the certain advantages that computers could provide while actively prompting human beings to inquire, to think, to explain, and to understand. Three advantages come quickly to mind.

First, stimulating invention through computer-assisted instruction offered a unique setting for studying, collecting, and describing what ultimately was the most individual behavior in the entire composition process--the discovery and the first formulation of ideas. Second, well-conceived, computer-assisted invention could be a viable, supplementary tool for composition teachers to add to their pedagogical repertoire, for actually having to give individual instruction about every conceivable subject a student might write about in a semester would certainly be mentally, if not physically, exhausting. Third, using CAI as the independent variable in a specific research design would not only strengthen the experimental control, but also allow further replication and continued development.

The impulse for this research, therefore, was to combine the fruits of the rhetorical renaissance in English composition with this developing technology of instructional computing. From this impulse, the major question evolved: could supplementary computer-assisted instruction be designed, developed, and programmed which would effectively stimulate most individual's inventive process? Ultimately, the specific objective became to design, program, test, and evaluate three CAI modules for stimulating rhetorical invention within the freshman English composition setting.

Developmental Considerations -- Invention

Ever since the publication of Research in Written Composition (1963), researchers in English composition have been critically examining the design and the data-gathering techniques of their empirical scholarship. The list of unexplored research questions Richard Braddock, Richard Lloyd-Jones, and Lowell Schoer offer include a few which relate to the problem in the present study:

1. What kinds of situations and assignments at various levels of schooling stimulate a desire to write well?

8. At which levels of maturation does it seem appropriate to introduce the various rhetorical elements of writing?

10. What are the direct and indirect effects of particular sensory experiences and guided observation upon writing?

18. Can formal study of rhetorical theory or of logic help writers?

22. How does a person go about starting a paper? What questions must he answer for himself? (pp. 52-53)

Answering these questions generates the first two considerations for this research. The first is to create and evaluate computer-assisted instruction in invention in order to discover whether or not CAI offers a suitable learning environment and an appropriate "sensory experience" for generating ideas by freshman English composition students. The second consideration is to measure the extent, if any, to which students can more effectively begin a paper if they understand that their creative processes and formal, systematic, heuristic processes mutually reinforce each other. This attempt to create a scientific setting for the study of invention responds to the challenge Braddock, Lloyd-Jones, and Schoer issue in their summary:

If little has been proven about the instructional factors influencing composition, it is fair to say that almost nothing has been proved in a scientific sense about the rhetorical aspects of written composition. By "rhetorical" is meant here those aspects of writing which (to simplify somewhat) are larger than the unit of the sentence -- in expository writing, for instance, the main idea and its analysis; the support of subordinate ideas with details, examples, statistics, and reasons; and the organization of the previous elements into an orderly and meaningful whole. It is a challenge to investigate these aspects of writing in a scientific way. (p. 38)

Consequently, Braddock, Lloyd-Jones, and Schoer conclude that most of the rhetorical considerations in composition research are unexplored territory. Despite the intervening fifteen years, a great many rhetorical considerations remain unexplored, though the thinking, the defining, and the urging have continued.

Among the general studies which have attended exclusively to the realm of invention are Janice M. Lauer's "Invention in Contemporary Rhetoric: Heuristic Procedures" (1967) and Tommy J. Boley's "Rhetorical Invention: A Synthesis of Contemporary Concepts" (1972). Both describe, classify, and evaluate specific discovery procedures which have emerged in the English composition curriculum, and each offers another major consideration for this research.

Briefly, Lauer's dissertation investigated "the contribution psychology has made toward an understanding of creative problem-solving and heuristic procedures" (p. 1). With regard to this research, one of the important ideas she uncovered in psychological studies was that training in heuristic strategies had, with some significance, improved general problem solving abilities. She writes:

A final contribution of psychologists which occurs both explicitly and implicitly in the discussion of the heuristic strategies in problem solving is their ability to be trained. Many of the psychologists who are working in creative problem solving are interested not only in knowing what activities occur within creativity but also in determining what training in creative problem solving is possible. Obviously, this consideration is very important to rhetoric. Some teachers of composition have concluded that writing is not teachable. The conclusions that psychologists have come to in this regard are important, therefore, for any heuristic models proposed for writing. (p. 28)

As the nature of cognitive psychology overlaps other human endeavors, the nature of rhetoric also overlaps, even encompasses, other human endeavors. Lauer's study leaves no doubt about this matter. Moreover, by attending to research in one, we simultaneously enrich our understanding of the other. The third major consideration, therefore, was to construct the

computerized invention instruction to be consistent with the lines of inquiry in the theoretical psychological research--in particular, research about the nature of creativity and theories involving intersecting matrices (Koestler, 1964).

Four years later, Boley noted in his dissertation that "the emphasis on writing as a 'process' initiates a controversy between the rhetoricians who advocate the use of a 'topical' system, which can supply a writer with lines of reasoning for the support of his proposition, and the rhetoricians who advocate the use of a 'discovery' approach, which can enable a student to find material about a subject that will lead to the creation of new concepts" (pp. v-vi). The synthesis of these invention heuristics, Boley argued, can be achieved by selecting the appropriate method of invention according to the aim and the mode based upon James L. Kinneavy's A Theory of Discourse (1969). Boley, therefore, (1) amplifies the logical systems of the various kinds of discourse, where Kinneavy writes of invention; (2) compares and illustrates the similarities of the tagmemic approach and the modes of description, narration, and classification; and (3) discusses four practices which limit the composition curriculum: (a) limiting the

kinds of writing to specific kinds of discourse, (b) omitting invention all together, (c) assigning particular/exclusive subjects, and (d) pre-establishing form or structure of writing. Thus, Boley argues not so much for a grand synthesis of heuristic as his title might suggest, but rather clarifies the distinction among heuristics so that a writer can appropriately match heuristic to aim and mode. He also urges the composition teacher not to limit the range of invention. The implied difficulty here is that most composition teachers have not yet trained themselves to tie specific cognitive inquiry strategies to a comprehensive theory of discourse. Nevertheless, his remaining research questions dealt with whether or not the heuristics actually behaved as they are theoretically supposed to behave in the freshman composition setting. The important developmental considerations were (1) to design the computerized invention modules to emphasize the student's aim in writing, or at least help the student discover his or her purpose for writing while engaged in the instructional sequence, and (2) to attempt to verify if heuristics would differ as a result of selected aim and mode.

Finally, Richard E. Young in a recent essay entitled "Paradigms and Problems: Needed Research in Rhetorical Invention" (1978) likewise calls for research on the competing theories. He writes:

The research needed at the moment is research that helps us make reasonable judgments about the adequacy of the theories of invention we have been discussing [classical invention, Burke's dramatistic pentad, Rohman's prewriting method, and Pike's tagmemic invention]. Two general questions need to be asked of each:

1. Does it do what it claims to do? That is, does it provide an adequate account of the psychological processes it purports to explain? And does it increase our ability to carry out these processes more efficiently or effectively?

If the answer is negative, we must decide whether to drop the theory from further consideration; the decision, however, must be made cautiously since the answer may result from causes other than defects in the theory.

2. Does the theory provide a more adequate account of the processes and more adequate means for carrying them out than any of the alternatives?

Again, assuming that the research is reliable, a negative answer would make it difficult to continue regarding the theory seriously. (pp. 39-40)

Both of Young's questions are especially appropriate for, with few exceptions, specific invention strategies or heuristics have not been systematically taught in

English composition and, therefore, could not be systematically evaluated. The final consideration of this research addresses his first point--do heuristics do what they claim?--by collecting invention sequences and evaluating three instructional modules derived from three of the more popular heuristic procedures. Specifically, the three CAI modules are based upon (1) Aristotle's twenty-eight enthymeme topics, (2) Kenneth Burke's dramatistic pentad, and (3) Young, Becker, and Pike's tagmemic matrix, in particular the particle, wave, and field perspectives.

Developmental Considerations -- CAI and English Education

Since the early sixties when computer-assisted instruction evolved and extended the range of individualized instruction in American education, English educators have yearly become more and more intrigued with computer applications both in their classrooms and in their research. Articles from professional journals in the sixties were often preoccupied with features on teaching machines and programming instruction. Such articles did not have a great deal to do with actual computer-assisted

instruction, but they signaled a gradual acceptance, perhaps reluctant acceptance, of systems approaches to instruction. Since then, the state of the CAI art in English education has advanced considerably on all levels of instruction--but not without considerable debate.

In the October 1975 issue of College Composition and Communication, Ellen W. Nold's brief article entitled "Fear and Trembling: The Humanist Approaches the Computer" summarized over fifteen years of technological anxiety and represented, in many respects, a mandate for English educators to "put their best efforts into writing instructional programs" (p. 269). Nold writes:

Spinoza points out that "so long as a man imagines that he cannot do this or that . . . so long will it be impossible for him to do it." What is preventing humanists from using the computer for humanitarian purposes is merely their belief that they cannot use the machine. It is ironic that a group known to undertake calmly and surely the study of Latin, Greek, Russian, Chinese, Swahili, or Gaelic often balks at the much simpler task of learning the more logical, far less capricious, language of the machine. (pp. 272-273)

Her remarks attacked those who would contend that the computer would eventually dehumanize the humanities.

For some, the fear and the trembling resulted in English departments because the computer was another way to clone English teachers. Such was Ken Macrorie's (1970) reaction to one computer program when he christened the computer, Percival.

Percival incarnate is a monster who helps us see the English teacher incarnate--a cultivated, liberal, well-intentioned pusher of the life of the mind and feelings, dedicated to promoting moving and memorable expressions of the complexities of life. With his bloody marks in the margins of themes. With his refined and polite comments, like this one by Percival:

Well, Johnny H. Doe, it was nice to talk to you and to read your essay.

It was not nice to look at Johnny's carefully prepared dead body of a theme, cleaned of all the dirt of the street and the lines of experience around the eyes, inflated with abstract pedantic words, depersonalized with pseudo-objective phrases that rendered it like every corpse submitted to teacher.

Percival had carried out a monstrous act for his masters, asking Johnny to say something so valuable on paper that it was worth study and care and criticism, and yet depriving him of a true voice in which to say it. (pp. 6-7)

Certainly Macrorie makes the point that the computer can only do what English teachers do. He concludes, "The researchers knew English teachers, all right. They set up their computer to act like one" (p. 4). Simply the computer is a tool of the English instructor--nothing more, nothing less--a tool which necessarily reflects the educational philosophy of the instructor.

For this research, the major instructional computing consideration evolved from merely thinking about consequences. In other words, before English educators allow the computer to dehumanize their students, ought not these educators attempt to humanize the computer? If the humanities must suffer computer-assisted instruction, would not it be better for humanists to create the world they must suffer in? Edmund J. Farrell in English, Education, and the Electronic Revolution (1967) offers a cautiously worded recommendation:

Whether one believes the electronic revolution will have deleterious or beneficial consequences for mankind, he cannot ignore it. Even those most concerned with its potentially destructive effects upon human values readily admit that the process is irreversible: one cannot halt cybernation; one may only hopefully contribute to its intelligent control. What ultimate--if one can use such a word--effects the revolution will have waits to be known. . . . (p. 11)

Among those computer programs in composition which have attempted "intelligent" contributions are those which have freed the English teacher from those repetitive drill and practice sessions about syntax, spelling, usage, passive constructions--programs which deal with matters of rhetorical style. Thus far, little effort has been expended on appropriate CAI for rhetorical

invention and arrangement. Basically, the single consideration was simply to "do it"--develop and program invention sequences. With the exception of Ellen Nold's (1975) "discovery and surprise" program, there have been no documented attempts to stimulate rhetorical invention through CAI.

Overall, therefore, the computer in the composition class has not made nearly the impact that it has in the science and mathematics classrooms. A sample of the literature reveals that English educators are being urged to (1) use the computer to relieve them of time-consuming administrative tasks; (2) create basic English programs in grammar and syntax; (3) humanize the tone of the instruction in poetic forms, usage matters, and editing; (4) establish literary data bases to supplement literature courses; and (5) design programs to read and, perhaps, grade compositions.

Peter M. Illick and Kenneth B. Taylor (1974) hint that some initial reluctance by humanities faculties to supplement classroom learning exists because of the depersonalizing nature of programmed instruction. Such a fear, they contend, might in fact really be apprehension about how to apply the computer-assisted instructions to the process of writing. These two authors, however, do not approach

the dilemma directly in their article, "Computers and College Composition." Rather, they skirt the issue and argue generally that "English departments have been reluctant to consider the advantages made available by their campus data-processing centers" (p. 27). In other words, computers can relieve English teachers from many time-consuming tasks so that they can move to other more profitable academic pursuits. While their point is valid, they do not address specific CAI modules in grammar, editing, organization, or argumentation.

The majority of the instructional computer programs in English education have been drill and practice in the basic writing skills. Within the next few years, CAI designed to help prepare high school students for college composition courses should be readily available. Likely areas of concentration will be diction, sentence patterns, transitions, and standard punctuation. One such interactive sequence was funded jointly by the National Science Foundation and the University of Texas at Austin. The seven-module course, DIALOGUE, was designed by Susan Wittig and adopted in the writing laboratory version of the first-semester of freshman composition. In a recent article in Pipeline, Wittig summarizes these programs:

The theoretical approach to the teaching of syntax that has been adopted in the design of the modules was based upon the transformation-generative sentence-combining work of Kellogg Hunt and Roy O'Donnell. In order to minimize terminological confusion, however, this presentation to the students is made in terms of the more traditional grammar with which they are more likely familiar. These modules are written for non-remedial students and for students without severe dialect problems; they do not, for instance, teach verb tense patterns or pronoun-antecedent agreement. They stress the sentence patterns of written English, because many students are relatively unfamiliar with those patterns, although they may be orally competent. (p. 20)

The basic sequence has the student complete a few instructional exercises, take a competency examination on-line--usually two to eight questions--and, if necessary, receive some remedial work. The modules cover basic sentence patterns, nouns, adjectives, adverbs, coordination, appositives, and adjective clauses. Such programs supplement the work in composition; they do not replace a composition course. Consequently, for these programs to be effectively integrated into the composition curriculum, a "climate of acceptance" must be created within the English department. Wittig elaborates:

For transport to be even moderately successful, . . . the (most) important requirement is the establishment of what might be called a climate of acceptance. This climate may be described as a willingness on the part of the faculty . . . to accept this new and expensive educational medium, to learn to use it to its fullest effectiveness, and to build courses around it that share at least some of the features of the philosophical and pedagogical base on which the programs are built. Without this climate of acceptance, transport is technologically possible, but educationally undesirable; at best, simply effective; at worst, disruptive to the delicate political balance within departments or colleges. . . . The transport of computer-based instruction is not an easy task: there are technical, educational, and political problems--but they can be resolved. (p. 22)

The problem of humanistic reluctance, as Wittig points out, is the first dilemma--even for the programs which teach, drill, and polish those basic writing skills which have been allegedly declining since 1963.

A presentation I gave, entitled "Humanizing CAI in English" (1978), represents the general type of article now appearing with greater frequency in professional journals. Such articles summarize specific computer-assisted instructions in English composition. In "Humanizing CAI in English", three specific programs are described:

1. Cinquain Generation--a program which teaches a student to write rich, imagistic, oriental verses.

2. Five Usage Toughies--a program which drills students with exercises illustrating the often perplexing differences between affect and effect, lie and lay, among others.

3. Brevity in Composition--a program which transforms the writer from a loving, tender, expressive human being into a lean, hungry, tooth-grinding, green-visored editor (a complicated metamorphosis, to say the least) by instructing a student to cut excess relative clauses, expletives, and jargon.

Another recent paper in this program summary format was delivered by Gayle Byerly (1978) at the Ninth Conference of Computers in the Undergraduate Curricula. The presentation entitled "Generating English Programs at a Small College" recounts the development and four-year evolution of three computer-assisted instructions featuring literature. The course which these three programs supplemented was designed to review "genre development through various periods and movements" and enable a student "to define key terms and major authors, develop a firm sense of chronology, and be able to show familiarity with a reasonable selection of significant works" (p. 127). While Byerly admits her

work with the computer at Ursinus College can hardly be considered a "massive project," she concludes:

I feel that humanities teachers may indeed utilize the computer effectively by using enough programs to accustom themselves and their students to the technique, maximizing the required student thought input and minimizing the required student typing input, integrating computer materials with class work, and retaining the reasoned perspective and seasonable humor typical of the humanities field at its best. (p. 132)

Byerly's notion to combine the best of instructional computing with the best of the humanities cannot be overemphasized.

One of the most intriguing possibilities for using computers in the composition classroom is their application for theme grading and evaluation. As Arthur Daigon (1966) points out, the first question most English teachers ask is "How can a machine read and grade a composition" (p. 48)? Here the pedagogical implication is clear: a machine cannot read as critically as a teacher can. Such a reply is true to a degree, but such an argument may be countered, for in composition courses, how can one teacher read 130 to 150 themes in precisely the same frame of mind? No human being would be able to address or even find all of the important considerations in that many compositions. A computer can be programmed, however, to look for and to

comment upon the same details for all of these compositions; it would be consistently fair and perhaps even more thorough than many teachers have the time to be. Paul L. Briand (1977) writes:

It is now possible, thanks to work done in California, Connecticut, Texas, Michigan, Illinois, and even Edinburgh, Scotland (to name a few), for a student to drop off his composition at the computer center, on his way home or to the dorm, come by on his way to class in the morning, and pick up a computer analysis of his composition which would out-do the average freshman English instructor or the harried graduate teaching assistant. As a matter of fact, such an analysis, far from dehumanizing the student, would personalize his writing problem and -- most importantly--would free up his instructor or graduate assistant to do the things they do best: use their creative intelligences to discuss such vital matters as selection of subject and narrowing to thesis, organization and development, usage and style--the very things the computer cannot do. (p. 4)

Again, the keynote is the use of the computer as a humane tool. At the very least, English educators should integrate a computer's capability to provide helpful, editorial feedback. Such an automated, formative evaluation would enable instructors to save their own humane, summative evaluations for those vital matters Briand suggests.

Today, developments in computer technology continue at a remarkable rate. The humanist must, therefore, see to it that the relationship between humanity and machine is a sound one. Our technological society and the educational system which serves it must be concerned with developing the thinking expertise of our students. Developing computer instruction which enables students to think about difficult, open-ended matters is within our grasp today. Developing computer instruction which enables both students and computers to discuss difficult, open-ended matters will soon be within our grasp. Undoubtedly, technology has emerged within the English curriculum, and many English educators have acknowledged that this newfangled machine will have a great impact not only on what they teach but also on how they teach it. Since a computer recognizes that students learn at different rates and can thus be programmed to account for such differences, computer-assisted instruction in invention will necessarily allow students to treat their individual subjects differently. The computer, well-programmed, gets to the heart of what is truly basic in education--a basic commitment as a society to the full development of every citizen's potential. In CAI-prompted invention, each student will have been exposed to a complete

strategy for exploring a subject and hopefully complete a well-reasoned, mature, thorough analysis of the topic. Needless to say, such a lesson well-learned in school should have great ramifications. Like the advances made in media-application in the English classroom over the last twenty years, the advances in computer-assisted instruction are certain to continue at a lively pace.

The Heuristics

My aim in the following few pages is to acknowledge briefly the sources and summarize the corresponding research about the three heuristic methods selected for the CAI modules. What may first be conspicuous, however, are the heuristic methods which were not selected: predominant among them, Rohman and Wlecke's prewriting (1964), Toulmin's schematic model (1964), Christensen's generative rhetoric (1967), Larson's seven discovery groups and associated questions (1968), and Flower and Hayes's problem-solving strategies (1977). Not that these methods are any less helpful--frankly we do not know. Not that these invention strategies are incompatible with the CAI format either. Rohman and Wlecke's meditation steps (preparation, "points," and colloquies) as well as their

analogy "bisociations" would make provocative programs. Toulmin's logic is nothing if not systematically conceived and could be most useful in inventing and arranging persuasive discourse. Christensen's framing is most tempting for syntax-based invention schemes. Larson's questions are practically ready for CAI as they are, and, if students had already classified their respective subjects as "single items," "abstract concepts," "collections of items," etc., they could be immediately branched to the most appropriate inquiry. Flower and Hayes's "issue trees," particularly the manner in which they help a writer differentiate high- and low-level concepts, are tempting for their graphicness.

The primary reason, however, for selecting the topics, the pentad, and the tagmemic method was their current popularity. Since Lauer's (1967) evaluations of current rhetorical theories for their comprehensiveness and their efficiency, the "neo-Aristotelian" theory, Burke's theory, and the tagmemic model have accumulated some evidence that they are among the most powerful heuristic methods. In fact, Lauer's scale rates them at ten, twelve, and fourteen "total power" scores respectively (pp. 145-149). The distinctions among the three fell beneath the two criteria of simplicity and

sequence--Burke's pentad losing two points to tagmemics for simplicity; Aristotle's topics losing more legitimately four points to tagmemics for these categories. Still, such distinctions need to be verified, and other "operating" distinctions clarified and reported among these three systems. Needless to say, if this research prompts either other CAI-invention modules or evaluative research designs among heuristic methods, then it too has become a heuristic. As W. Ross Winterowd (1975) enjoys reporting, "My friend Richard Young . . . once said to me, 'Rhetoric is a fascinating discipline precisely because everything remains to be done'" (p. 37).

Aristotle's Topics. Among the tools of invention in classical Greece and Rome, the topoi were the most prominent. Since the purpose of classical rhetoric was to persuade, lists of topoi helped an orator discover arguments. Knowing specific tactics and being able to select strategies for interpreting and persuasively presenting ideas was important. In the strictest sense of the words, rhetorical invention did not mean discovering what was unknown but rather retrieving appropriate arguments for any persuasive situation. Consequently, the classical rhetorical

treatises or handbooks assembled substantial lists of topoi--Aristotle's list perhaps being the most well-known.

The CAI questions based upon Aristotle's enthymeme topics are adapted from his Rhetoric, specifically Book II, Chapter 23: 1397a17-1400b35. At this point in the Rhetoric, Aristotle writes that it is time for his readers to "lay hold of certain facts about the whole subject, considered from a different and more general point of view" (p. 142). Again, remembering that when Aristotle writes of invention he is most concerned with enabling one to discover the most suitable argument for persuading an audience, most of his explanations are really examples of how a select topic may be applied in a certain situation. His illustration of simple consequences, his thirteenth formal topic, is such an example:

Since it happens that any given thing usually has both good and bad consequences, another line of argument consists in using those consequences as a reason for urging that a thing should or should not be done, for prosecuting or defending any one, for eulogy or censure. E.g., education leads both to unpopularity, which is bad, and to wisdom, which is good. Hence you either argue, "It is therefore not well to be educated, since it is not well to be unpopular": or you answer, "No, it is well to be educated, since it is well to be wise." The Art of Rhetoric of Callipus is made up of this line of

argument, with the addition of those of possibility and the others of that kind already described. (pp. 149-50)

Stripping away the examples from the twenty-eight topics enables us to see their inherent heuristic power. The enthymeme topics are:

1. opposites
2. inflections, "modification of the key-word"
3. correlative terms, correlative ideas
4. a fortiori--"if a quality does in fact exist where it is more likely to exist, it clearly does not exist where it is less likely."
5. considerations of time
6. utterances made by your opponent against you and now turned against him--"the purpose is to discredit the prosecutor."
7. definition
8. various senses of a word, connotations
9. logical division
10. induction

11. existing decisions
12. parts of a subject, taken separately
13. good and bad consequences
14. contrary alternatives or consequences,
"divarication"
15. paradox of private feelings and public
behavior
16. proportional results or rational
correspondence
17. identity of results to the identity of
their antecedents
18. altered choices, i.e. "men do not always
make the same choices on a later as on an earlier
occasion."
19. conceivable motives as actual motives for
an event or a state of affairs
20. incentives and deterrents as "the motives
people have for doing or avoiding the actions in
question"
21. incredible occurrences

22. inconsistencies of the facts--conflicting dates, acts, and statements
23. explaining special circumstances
24. the presence or absence of the cause to the existence or non-existence of the effect
25. better courses, better alternatives
26. contemplated action runs counter to previous actions
27. previous mistakes
28. meaning of names

It is the nature of these twenty-eight enthymeme topics to help a writer or speaker persuade his audience. As a heuristic for extracting subject matter from the void, these topics, on the surface, would seem less valuable. Indeed, Aristotle argues that the first thing speakers must know is "some, if not all, of the facts about a subject." "Otherwise," he continues, "we can have no materials out of which to construct arguments" (p. 140). Therefore, the legitimate power of the enthymeme topics derives from their predicable nature. The list of topics above was typical of the classical rhetorical treatises which assembled lists of topoi for students and statesmen alike to learn and employ.

Young (1976) summarizes, "Arguments in support of the thesis can be discovered systematically by the use of topics, or heuristic probes: logical arguments can be developed by definition, comparison, contrast, antecedents, consequents, contradictions and so on" (p. 9). Corbett (1971) likewise argues that the classical rhetoricians defined the topics as "really an outgrowth of the study of how the human mind thinks" (p. 108). Kinneavy (1971) counters the argument that the topics "are not fertile frameworks for exploration or persuasion in modern times" by stressing the validity of the basic notion of the topics, i.e. "an attempt to formulate the kinds of arguments which seem plausible to a given audience" (pp. 247-248). Another important consideration is that Aristotle's topoi are not meant to be an exhaustive listing, but as Richard C. Huseman (1965) writes, "as an indication of the more important argumentative forms that an orator will need to use" (p. 249). He continues:

The general topics, then, are either implicitly or explicitly stated enthymemes. Take, for example, Aristotle's first argumentative form, based on a consideration of opposites. His example of this argumentative form, "temperance is beneficial; for licentiousness is hurtful," is stated in enthymematic form and can be thrown into valid syllogistic form containing two premises and a conclusion. These general

topics, then, are guides to the form of argument. It is in presenting these general topics, which can be used in all types of oratory, that Aristotle makes his contribution to the concept of topoi held by his predecessors, i.e. that topoi can only be used for certain speeches. (pp. 249-250)

Consequently, Aristotle's enthymeme topics are at once non-data conditioned and the rhetorical equivalent of the logical syllogism. Corbett, again, points out that a modern view defines the enthymeme as an abbreviated syllogism. This modern view, Corbett holds, is probably implicit in Aristotle's statement from the Rhetoric (I,2), but it is not Aristotle's complete description of the enthymeme by any means. As Aristotle illustrates in the Prior Analytics (II,27), the essential difference is that the syllogism leads to a necessary conclusion from universally true premises, but the enthymeme leads to a tentative conclusion from probable premises (Corbett, p. 73). In the development of Aristotle's thinking, as Kinneavy (1979) notes, a decline of certitude and a deemphasis on alethe (meaning roughly "absolute knowledge or truth") corresponds to a rise of probability and an increasing emphasis on pistis (meaning "probable knowledge or belief"). Such a development hardly surprises our culture, since it merely verifies our age's scientific and philosophical

dissatisfaction with "universally true premises." For out of the ashes of absolute truth and logical positivism, the rhetorical enthymeme rises. The topics, therefore, encourage a writer to base arguments "upon probabilities as well as certainties" (1396a4).

The recent research in Aristotelian rhetorical theory has been conducted in the area of speech, not English composition. In particular, two studies have incorporated Aristotle's notions about the topics. One of these studies is theoretical, the other empirical.

Rodney B. Douglass's "A Modern Aristotelian Rhetorical Theory" (1976) constructs a modern social-psychological rhetorical theory which is "consistent with an Aristotelian orientation to rhetorical communicative phenomena" (p. 2494-a). What Douglass explains are the ways in which Aristotle's tactics for invention are consistent with ongoing psychological activities, are structured stimulus situations for psychological pattern-making, and are means for anticipating rhetorical events. While Douglass's sweep is broad, his work verifies the renewed psychological interest Lauer and others have taken in the composition process.

Aubrey Neil Yerkey's "The Retrieval of Rhetorical Topoi: A Computer-Assisted System for the Invention of Lines of Argument and Associated Data" (1976) is the only research found which combined invention and instructional computing. These computer programs were designed to help a speaker find potential arguments by presenting the speaker with information about how certain audiences felt about twenty-one selected issues. The resulting analysis led to the development of an algorithm which was developed into two computer programs. Yerkey writes, "This algorithm became the heart of two computer programs: one organizes and displays information about any number of issues and creates a permanent data bank; the second accepts measures of audience attitude toward one issue, retrieves the appropriate information from the data bank, displays the predisposition, and suggests appeals" (p. 2501-a). Yerkey's two experiments--comparisons of computer-cued speakers with other speakers--found that "the cued speakers effected significantly greater attitude change than uncued speakers, but not quite significant differences in quality of arguments and overall efficiency" (p. 2502-a). This research, however, uses the computer as a data-base for invention on only a selected number of subjects. Basically, the

programs are closed problem-solving systems in which the computer has some knowledge about audience's attitudes toward important issues. If a speaker wished to persuade an audience about another issue, the programs would be little help. Nevertheless, Yerkey's study illustrates that it is indeed possible to create a computer-assisted invention sequence which will help speakers discover persuasive arguments about selected issues.

Burke's Dramatistic Pentad. The questions based upon Kenneth Burke's dramatistic pentad are derived from A Grammar of Motives (1969). The five key terms of dramatism--Act, Scene, Agent, Agency, and Purpose--represent the specific perspectives all men share in the "attributing of motives" (p. xv). Specifically, Burke contends that "any complete statement about motives will offer some kind of answers to these five questions: what was done (act), when or where it was done (scene), who did it (agent), how he did it (agency), and why (purpose)" (p. xv). Many people associate the dramatistic pentad with the journalistic pentad, i.e. who, what, when, where, and why, but somehow the journalistic pentad oversimplifies in its closure the potential complexity of an inquiry

using the correlations, associations, and combinations a consideration of these terms can offer. To illustrate this phenomenon, Burke writes about an exhibit of photographic murals he once visited at the Museum of Modern Art; he recounts seeing "an aerial photograph of two launches, proceeding side by side on a tranquil sea:"

Their wakes crossed and recrossed each other in almost an infinity of lines. Yet despite the intricateness of this tracery, the picture gave an impression of great simplicity, because one could quickly perceive the generating principle of its design. Such, ideally, is the case with our pentad of terms, used as a generating principle. It should provide us with a kind of simplicity that can be developed into considerable complexity, and yet can be discovered beneath its elaborations. (p. xvi)

Thus, what ultimately recommends the dramatistic pentad is the manner in which the ten possible ratios can be manipulated in order to explore unknowns. For example, perhaps one can describe the scene and define the act, but a scene-act ratio enables one to explore a relationship between where something happened and what happened. Such ratios offer the writer exploratory probes he or she may not have considered before.

Kenneth Burke opens a recent essay entitled "Questions and Answers about the Pentad" (1978) by writing "Maybe my concern with matters of literary theory might be of some suggestive value to persons concerned with the teaching of literary composition. But what should I say?" (p. 330) Implicit in such a statement is the notion that pentadic invention, while often used as a means of inquiry in composition courses, is actually a literary theory which became the "germ" (p. 330) of the overall philosophic position Kenneth Burke articulated. As Burke envisions the dramatistic pentad as a more dialectical than rhetorical instrument, he traces its exploratory appeal not to Aristotle's system of topics but to Aristotle's classification of causes. Specifically, he traces the pentad's evolution through both Aristotle and Aquinas:

The most convenient place I know for directly observing the essentially dramatist nature of both Aristotle and Aquinas is in Aquinas' comments on Aristotle's four causes (in pp. 154-163 of the Everyman's Library edition). In the opening citation from Aristotle, you will observe that the "material" cause, "that from which (as immanent material) a thing comes into being, e.g. the bronze of the statue and the silver of the dish," would correspond fairly closely to our term, scene. Corresponding to agent we have "efficient" cause: "the initial origin of change or rest; e.g., the adviser is the cause of the action, and the father a cause of the child, and in general the agent the cause of the deed." "Final" cause, "the end, i.e. that for the sake of which a thing is," is

obviously our purpose. "Formal" cause ("the form or pattern, i.e. the formula of essence") is the equivalent of our term act. . . . We can approximate the equation closely enough if we think of a thing not simply as existing, but rather as "taking form," or as the record of an act which gave it form. . . .

There is also a negative way of establishing the correspondence between form and act. Recall the scholastic hexameter listing the questions to be answered in the treatment of a topic: Who, what, where, by what means, why, how, when: quis, quid, ubi, quibus auxiliis, cur, quo modo, quando. The "who" is obviously covered by agent. Scene covers the "where" and "when." The "why" is purpose. "How" and "by what means" fall under agency. All that is left to take care of is act in our terms and "what" in the scholastic formula. Also, the form of a thing was called "whatness," or quidditas. (p. 228)

Burke's rhetoric, therefore, differs from classical rhetoric in that his major concern is not persuasion but rather "identification" (Burke, 1951; Corbett, 1971; Kinneavy, 1971; Young, 1976).

Finally, since some popular composition textbooks cite the pentad as an important invention heuristic (Irmscher, 1972; Winterowd, 1975), Burke (1978) offers a few precautions in its use in the composition setting; he notes:

But Irmscher [1972] makes one mistake in comparing the pentad with Aristotle's topics. In the Rhetoric, for instance, Aristotle's list is telling the writer what to say, but the pentad in effect is telling the writer what to ask. Whereas the terms may look positive, they

are but blanks to be filled out. . . .

Maybe I can now make clear my particular relation to the dramatistic pentad, involving a process not quite the same as either Aristotle's or Irmscher's. My job was not to help a writer decide what he might say to produce a text. It was to help a critic perceive what was going on in a text that was already written. Irmscher uses the "dramatistic" terms as suggestions for "generating a topic." My somewhat similar expression, "generative principle," is applied quite differently. My job was to ask of the work the explicit questions to which its structure had already implicitly supplied the answers. The kind of thinking which I associate with the pentad and which needs further development should guide the framing of these questions. . . . (p. 332)

Burke's distinction, here, between what to say and what to ask is a fine one. Although such a distinction exists in invention strategies, in the programs developed for this research--all concerned with the framing of invention questions--the burden of asking fell into the computer's domain and the heavier burden of saying fell into the writer's domain.

Still, the majority of the scholarship on the pentad does not explore the "framing of the questions" but rather explicates Burke's theoretical concepts; (see Young (1976), pp. 13-16). To date, no empirical research has attempted to validate the quantitative and qualitative aspects of the dramatistic pentad in the composition setting.

Tagmemic Invention. The science of human behavior and, specifically, the science of verbal behavior form the context for tagmemic invention. Since Kenneth Pike's Language in Relation to a Unified Theory of the Structure of Human Behavior (1967), Viola G. Waterhouse (1974), as well as a number of other linguists, argue that language study and research have had to (1) view language as a type of human behavior, and (2) examine language "in the context of and in relation to human behavior as a whole" (p. 5). Pike looks to Ward H. Goodenough (1957) to explain the general problem:

The general problem can be summed up in the words of Goodenough, who affirms that "The great problem for a science of man is how to get from the objective world of materiality, with its infinite variability [an etic view of the world], to a subjective world of form as it exists in . . . the minds of our fellow men" [through the discovery of their emic units]. (p. 55)

Since this problematic transition from etic to emic units also occurs as a writer begins the composing process, Richard Young, Alton Becker, and Kenneth Pike began developing the tagmemic matrix as a rhetorical heuristic. The result is explained in their text Rhetoric: Discovery and Change (1970).

The heuristic procedure itself combines four maxims for understanding a writer's position in relationship to the world, an audience, and a language system. These maxims are:

1. "People conceive of the world in terms of repeatable units" (p. 26).

2. "Units of experience are hierarchically structured systems" (p. 29).

3. "A unit, at any level of focus, can be adequately understood only if three aspects of the unit are known: (1) its contrastive features, (2) its range of variation, and (3) its distribution in larger contexts" (p. 56).

4. "A unit of experience can be viewed as a particle, or as a wave, or as a field. That is, the writer can choose to view any element of his experience as if it were static, or as if it were dynamic, or as if it were a network of relationships or part of a larger network" (p. 122). Incidentally, in this current study, the CAI questions were derived from these perspectives of particle, wave, and field.

The result of combining these maxims is a nine-celled matrix: the rows representing the perspectives of particle, wave, and field; the columns representing the unit's "contrastive features, variant forms, and distributions in larger contexts" (p. 126). Using the matrix, then, is a matter of developing some facility in shifting cells; Young, Becker, and Pike write:

By following the instructions in each cell, you are led to shift perspectives systematically, focusing your attention first on one feature of the unit and then another. In doing so you fulfill the basic requirement of effective inquiry, which is to vary your assumptions. The purpose of the procedure is not to turn you into an intellectual machine that gathers information mechanically, but to guide and stimulate your intelligence, particularly your intuition, which is able to deal with enormous complexity in an original way. (p. 128)

Essentially, tagmemic invention emphasizes "psychological changes in the writer" and focuses on the "retrieval of relevant information already known, analysis of problematic data, and discovery of ordering principles" (Young, 1976, p. 23). Again, Waterhouse, in The History and Development of Tagmemics, has reported that the bibliography concerning tagmemics and English is continuing to grow, particularly in the teaching of composition and in the teaching of English as a second

language (p. 73). Among those who have incorporated aspects of tagmemics in their composition courses are Hubert English (1964), Janice Lauer (1967), and Lee Odell (1970). Increasingly, more and more classroom invention strategies rely on the power which is generated by this heuristic--an illustration being Gracia Grindal's and Ellen Quandahl's (1977) adaptation of Becker's pattern of topic-restriction-illustration or "T-R-I" methodology.

Of the three heuristic procedures in this study, the tagmemic matrix is the only one which has been evaluated in a composition curriculum to determine if "instruction in tagmemic invention does in fact bring about significant changes in the student's conceptual ability and ability to communicate" (Young, 1976, p. 24).

An important study in the teaching of tagmemic invention was Richard Young and Frank M. Koen's The Tagmemic Discovery Procedure: An Evaluation of Its Uses in the Teaching of Rhetoric (1973). This NEH-funded study attempted to determine "whether instruction in the tagmemic discovery procedure . . . significantly improves the student's ability to inquire into ill-defined problems and to communicate the results clearly and persuasively" (p. v). Their experimental

predictions were essentially calibrated to measure the growth in subjects' ability to identify, analyze, state, and explore problematic situations. The statistically significant improvements were achieved in the subjects' abilities to analyze and articulate problematic situations in terms of the tagmemic inquiry procedures. While the ability to identify problematic situations was not statistically significant and while the ability to explore problematic data efficiently was difficult to determine since the experimenters "were not able to determine whether this important result was directly related to the use of the nine-cell procedure or to a general loosening of constraints on thinking" (p. 48), their experiment actually did distill subjects' protocols for thinking about problems while in the prewriting stage.

The study is also valuable for articulating some of the descriptive behaviors of the twelve students who took part in the experiment. For example, Young and Koen noted that the task's directions to "list the ideas that come to mind" (p. 52) make it difficult to evaluate the protocol of the subject's thinking. This notion, of course, brings up the central issue of how best to test for heuristic internalization, especially when attempting to isolate specific cells of the nine

tagmemic perspectives. Another behavior which Young and Koen observed was that subjects tended to improve the number of their observations; they write:

This increase in the number of observations seems a worthy goal in itself. Its achievement could be taken to mean that the student has become aware of more items of information he possessed that were relevant to the problematic situation. It is unlikely that his general fund of knowledge had been significantly increased, but perhaps more of it has been raised to a conscious level. . . . We might point out . . . that one function of the heuristic procedure is to aid in retrieving relevant information. (p. 54)

Another important observation was that their subjects "found it difficult to withhold judgment during their inquiries" (p. 56):

They had a strong tendency to adopt a conclusion quite early and then seek supporting evidence. . . . They appear to have lacked what John Keats called "negative capability"--the ability to be "in uncertainties, mysteries, doubts, without any irritable reaching after fact and reason." Keats believed that this ability to tolerate ambiguity is exceptional, and so it seems. Further work would be needed to induce students to examine their ideas more critically and to withhold judgment while inquiring. (p. 57)

The problem, which this tendency to prematurely evaluate ideas illustrates, is probably more cultural than rhetorical; nevertheless, it is difficult for many subjects to truly withhold judgment and allow their creative energies to reach for new approaches and answers.

Another significant research study in the teaching of tagmemic invention was conducted by Lee Odell. Odell in "Measuring the Effect of Instruction in Pre-Writing" (1974) summarizes the findings of his dissertation, Discovery Procedures for Contemporary Rhetoric: A Study of the Usefulness of the Tagmemic Heuristic Model in Teaching Composition (1970). Odell's research questions were: (1) Is it in fact possible to give students help in the prewriting stages of composition? (2) Can they be taught a set of operations which will actually have some demonstrable effect on their writing? And (3) how would one go about identifying those operations in student essays? By examining essays written in two freshman composition classes at the University of Michigan, Odell sought "to provide at least partial answers to these questions" (p. 229).

His research rationale was to "(1) predict the changes that should take place in student's work; (2) determine the number of students whose writing showed these changes; (3) determine how likely it was that these changes could be attributed to chance" (p. 230). Odell summarizes his results:

Prediction I stated that students would examine data more thoroughly. In their posttest essays, they would (1) perform a greater number of the intellectual operations taken from Pike's theory; (2) perform each operation more times than in their pretest essays. The first part of this prediction received little support: only three posttest essays out of twenty showed students performing a greater number of the intellectual operations; sixteen showed no change. Results . . . for the latter part of Prediction I more clearly supported the hypothesis. In each of the posttests, there was an increase in the number of times the students performed at least some of the operations suggested by the heuristic model. For four of the operations, the proportion of essays in which the predicted increase occurred was statistically significant. For one operation, the proportion of essays showing this increase was more modest and could be attributed to chance.

Prediction II stated that the posttest essays would contain fewer conceptual gaps than did the pretest essays. This prediction was not confirmed. Only fifty percent of the posttests showed the predicted change, while eight showed an increase in conceptual gaps.

Prediction III stated that in their posttest essays students would solve problems more adequately than they did in the pretest essays; they would: (1) present more evidence; (2) make fewer statements that might seem questionable to a reader; (3) increase the number of statements in which they acknowledge

that alternative hypotheses are possible or try to justify not including evidence that might seem to weaken their argument. . . . The first part of the prediction was borne out by significant increases in students' use of evidence in posttest essays. Parts 2 and 3 of the prediction were not confirmed. (pp. 235-236)

Odell's research confirmed the need to sort out systematically what can and what cannot be taught successfully in the prewriting stage of the composition process. However, any conclusions based on his findings must be considered tentative for the following reasons. First, his sample was small. Second, he taught both of the composition courses himself. Third, evaluating prewriting results from evidence in completed essays allows a multitude of uncontrolled variables. Odell's preexperimental design, specifically a one-group, pretest-posttest design, is perhaps the major flaw, though he explains why he had to settle for such a design:

Conventionally, the effectiveness of this experimental course would be determined by measuring the progress of two groups of students--one which had received instruction in the use of prewriting procedures and one which had not--toward a common goal. In this case such a comparative study was not practicable. No other section of Freshman English was sufficiently similar in aims or content to allow meaningful comparison. (p. 230)

While Odell's design is consequently short on internal validity (mainly maturation and test effects), his research is vital, for the tagmemic heuristic had never been so systematically evaluated for its effectiveness in the freshman English classroom. Moreover, Odell's research provides support for the belief that the teaching of prewriting procedures positively affects student writing.

Research Questions

On the basis of these developmental considerations, the three heuristics, and a four-group, pretest-posttest research design (described fully in the next chapter), the following research questions were posed:

1. How will freshman English composition students react to computer-assisted invention?
2. Will freshman English composition students sustain "invention dialogues" with a computer program, even though they recognize that the computer knows nothing about the content of their research subject.

3. Will there be different reactions, sustaining rates, and extending inquiry percentages among the experimental groups because of the different heuristics?

4. Will these CAI units stimulate composition students to generate more ideas about their respective topics than they could generate on their own in the same time?

5. Will the CAI units stimulate composition students to discover more quality ideas about their respective subjects than they could discover on their own in the same time?

6. Will the composition students in the experimental heuristic treatment groups internalize the heuristic well enough to generate their own questions?

7. Will there be differential quantitative effects among specific heuristic treatments?

8. Will there be differential qualitative effects among the specific heuristic treatments?

9. Without specific instruction in arrangement, will CAI-prompted students be able to provide a more insightful, more comprehensive, more mature, more suitable, and more helpful composition plan than those subjects in the control group?

10. What correlations will there be between the quantitative and qualitative performances and such variables as SAT verbal score, SAT quantitative score, ECT placement score, and first semester grade in English composition?

Hypotheses

Finally, these research questions prompted the formulation of these corresponding research hypotheses:

1. As described by an anonymous Likert questionnaire, the experimental subjects will share an overall positive attitude toward the CAI units. This descriptive hypothesis will be supported if the overall item score's mean exceeds 3.5 on the five-point Likert scale.

2. Over ninety-five percent of the experimental subjects will sustain an invention dialogue for the full duration of the thirty-minute posttest, and there will be no difference among the three groups.

3. Subjects will answer seventy-five percent of the non-data conditioned questions presented in the thirty-minute posttest and extend the inquiry (i.e., answer the question and elaborate on their response at least once) sixty percent of the time. Additionally, there will be no difference among in the rates among the experimental and control groups.

4. There is no difference in individual's quantitative performance on a pretest and a posttest as measured by a surface-cued, proposition analysis. This hypothesis is to be tested at the .05 level of significance.

5. There is no difference in individual's qualitative performance on a pretest and a posttest as measured by a panel of composition teachers using a scale emphasizing evidence of insightfulness, comprehensiveness, and linguistic cues of intellectual processing. A t-test for correlated samples will be used to test this hypothesis at the .05 level of significance.

6. Three weeks after the lectures and the on-line treatment, the experimental subjects will be able to generate ten questions about a selected subject from their respective heuristic strategies. Moreover, there will be no difference in the internalization performances among these three experimental groups as evaluated by a panel of experienced composition teachers.

7. There is no difference in the quantitative performance on a pretest and a posttest among the four groups. Additionally, there is no difference in the quantitative performances among the three experimental treatment groups. The level of significance will be .05.

8. There is no difference in the qualitative performance on a pretest and a posttest among the four groups. Furthermore, there is no difference in the qualitative performances among the three CAI-prompted groups. Again, the significance level will be .05.

9. There is no difference in the qualitative performance (criteria being insightfulness, comprehensiveness, maturity, suitability of arrangement, helpfulness, and holistic impression) among the composition plans of the four groups as evaluated by experienced composition instructors. Using analysis of

covariance, this hypothesis will also be tested at the .05 significance level.

10. There is no correlation between quantitative and qualitative performances and SAT verbal score, ECT placement score, and the previous semester's grade in composition. A Pearson correlation coefficient will describe the strength of the various relationships.

Tasks, Procedures, and Measures

The first developmental task was to design a series of instructional prewriting questions which would be expected to simulate three particular, articulated perspectives for examining a particular topic. These, however, had to be (at worst) somewhat interesting, appropriate, and relevant to existing theory (Roessler, 1977).

writer discover what he or she did not know about the subject, thus generating some felt difficulty, some dissonance, and prompting the student to articulate the particular problematic situation which the computer-cued interaction uncovered.

In late 1977, research began. First, dialogue models of question-answering systems were designed. Second, specific question pools were written based on the topics, the pentad, and the tagmemic matrix.

Developing the algorithm of an invention dialogue model raised a number of machine considerations. Among the major considerations were these five:

1. What type of program could be developed which allowed a computer-naive user to "invent" successfully? In other words, what kind of interactive design would enable an inexperienced computer user to sustain a question-answering dialogue about any subject?

2. Could this "invention" module be programmed well enough to elicit additional comments in an exploration of any subject?

3. Lacking content data-bases, would students lose interest? In other words, what motivational cues would adequately compensate for an inevitable lack of knowledge about their subjects?

4. What continuity could be achieved besides that inherent in the three heuristic methods?

5. Could such programs be developed in a cost-effective manner?

These questions followed from the general difficulties computer technicians were experiencing in attempting to design programs which "comprehended" and imitated natural language processing. For example, the research in artificial intelligence had carefully delineated the major deficiencies of man-machine communication. William C. Mann (1977) summarized the essential dilemma:

Conventional man-machine communication can give the computer user a sense of always operating "out of context," of having to continually re-specify what is relevant to performing a desired sequence of actions. In human communication it is the goal structures which carry the knowledge of what is relevant. Man-machine communication gives a sense of aimlessness, undirectedness, and lack of topic because there is no analogous body of knowledge being used to facilitate and interpret the communication. (p. 11)

Consequently, the developmental obstacle was how to shift the entire burden of content to the user and still make the inquiry representative of how the human mind actually works when inventing. The solution emerged by understanding that (1) heuristic inquiry was an explicit goal structure, (2) a sufficient number of specific semantic strings could be anticipated, (3) a series of syntactic prompts and non-data conditioned motivational strategies could also encourage the inquiry, and (4) a well-written, thought-provoking set of questions, as well as a reoccurring sense of purpose, could give the CAI modules a sense of direction. Again, though, the responsibility for content would be the user's. The state of the art, unfortunately, would allow no more than a minimal interpretation of the writer's declarative statements. The CAI unit's feedback would rely on word length cues, answer length cues, clarification request strings (e.g., "what?", "I don't understand. . . ."), and a brief list of direct commands (e.g., "explain!" "continue!" "repeat!" "wave!"). Thus, all responses which were not "understood" in the semantic subroutines would prompt the program to encourage the exploration, tally the response, and, depending on the number of responses to a particular question, either ask for more elaboration or

direct the writer's attention to the next question. Finally, no on-line mechanism could compensate or evaluate poor declarative responses; that adage about CAI--"garbage in, garbage out"--would necessarily apply.

Pilot Research. The second developmental task was to validate the three heuristic question pools; therefore, an off-line pilot study was undertaken. Three main questions were asked:

1. Will freshman composition students answer questions about their individual subjects, even though all the questions are non-data conditioned, and even though they will have had no formal instruction about specific heuristic strategies?

2. Will such question pools provide composition students with more ideas about their respective subjects than they could discover on their own?

3. Will there be differential effects among the three specific heuristic treatments as represented by these question pools?

Twelve students in a freshman English course in a second summer session at the University of Texas at Austin volunteered to participate in a "prewriting session with an English composition tutor." Eleven students completed the experiment; one subject withdrew for personal reasons. The students were randomly

assigned to one of the three experimental treatments, corresponding to either the Aristotelian topics, the dramatistic pentad, or the tagmemic matrix. Since their composition instructor required a research paper, the students were told that the tutor would help them explore their topic in a special prewriting conference.

The pilot design followed a three-group pretest-posttest design. The pretest was administered in a fifteen-minute session during one of the students' regular class meetings. The instructions were that the student list and number ideas about the subject of his or her research paper; the students were encouraged to write down all of their ideas since they would be helpful to the tutor later. Each subject's proposition count was doubled and reported as the pretest score. The treatment and the posttest were administered simultaneously--the treatment being questions from one of the heuristic methods and the posttest being the student's list of answers or ideas. Time for this session was thirty minutes. Again, no effort was made to teach the students a particular heuristic; they only realized that they were being asked to respond to a series of questions.

At the beginning of this session, each student was read these scripted instructions:

This afternoon . . . I am going to ask you a number of questions about your topic [mention their topic]. The questions are meant to be probing, but some may sound funny and not make much sense. However, if something, some idea, occurs to you, write it down, or, if you prefer, you can answer orally and write the idea down after you "talk it out"--whatever way is the most comfortable for you. Any questions so far?

Finally, you might think of me as a computer terminal for the next thirty minutes. As a matter of fact, I'll pretend I am a machine. Not a strange voice or anything like that, but you will have to tell me when you are ready to go on to the next question. Shall we try a couple of questions so you can get the idea. . . .

After a model question or two, the treatment began. During the treatment/posttest, a tally of the questions asked and the questions answered was kept. In order to check the tally, a cassette tape was also made of the treatment. Verbal positive reinforcement was given for every other idea. At the conclusion of the thirty minute session, the subject and the researcher discussed the experience informally. Did the session seem valuable? What did the student think of the experience in general? What was the worst question? What was the best question? This discussion was also taped. At the end of the session, the students were asked not to

discuss the treatment with other class members also participating in the study.

The Findings of the Pilot Study. The findings of this pilot study validated the heuristic question pools, for the students answered 228 of the 252 questions proffered--slightly over ninety percent and well above the predicted seventy-five percent. Five of the subjects answered every question, and only one subject failed to answer seventy-five percent of the questions. Furthermore, there was a significant difference in the quantity of ideas between the pretest and the posttest; in fact, a probability of .001 was achieved using a t-test for correlated samples. Finally, the null hypothesis that there would be no significant difference between the treatments with respect to the quantity of ideas was accepted. Thus, the specific heuristic method appeared not to matter with respect to the quantitative performance among these three small groups ($F=.0093$).

Programming Considerations. From these validated question pools and from the responses the students made for clarification, the next phase was to program these modules for the on-line experiment. Under the technical direction of Dr. George H. Culp, I developed three CAI units in the BASIC language for the

DEC-10 (Digital Equipment Corporation-10) computer at the University of Texas at Austin. Appendix A illustrates the general instructional design for all of the CAI units. Appendix B gives the listings for the respective programs. Appendix C contains three of the actual "runs" from the final experiment. Briefly, however, in the instructional sequence, the student would be welcomed to the computer terminal, offered the opportunity to review the directions and the specific heuristic, asked to enter a subject to explore, asked to comment on the purpose of writing about this subject, asked five of the easier heuristic questions (complete explanations and examples would be available here), and randomly prompted to add more information. This cycle would then be enlarged after the sixth question so that the entire heuristic set could be asked. At the same time, the student would be asked to comment more about purpose as well as given opportunities to narrow or change the subject. At the conclusion of the CAI inquiry, the student would tell the program to "stop!"

Unlike traditional programmed instruction and computer-assisted instruction of the drill and practice variety in which the answers are "known" (i.e. stored in the program's memory), these programs were designed to give one appropriate, though non-data conditioned, response. The programs could not verify a "right" response nor challenge a "wrong" response. Moreover, unlike laboratory instruction and computer simulation instruction in which the students' responses necessarily determine the next step, these invention modules generally relied more on counting the number of responses and the availability of other heuristic questions than on specific, declarative responses. Questions and certain commands helped the student control the direction of the inquiry, but exclusive control generally was not exercised by students. In the pentad and tagmemic programs, however, students had a little more flexibility in that they could command the system to ask questions from a specific perspective of the heuristic, i.e. "act!" or "scene!"/"wave!" or "field!" Overall, therefore, the interaction was designed to allow for active student involvement, machine heuristic manipulation, and cathode ray tube (CRT) compatibility.

The most challenging part of the programming was anticipating the ways in which the writers would indirectly ask for clarification. A keyword subroutine was finally selected (see "semantic stabs" in Appendix B) which anticipated up to twenty-seven strings, reading them linearly. These strings, combined with the randomness of the question selection and the pools of individualized responses, gave the programs a richness which exceeded the expectations of the prototype. The Aristotle program allowed 3,216,320 branching possibilities from the welcoming sequence through the full exploration of the first question. The Burke and the tagmemic modules allowed more possibilities since a writer could select specific heuristic perspectives--6,272,000 and 5,408,000 respectively. Furthermore, as an example, engaging in a dramatistic inquiry through five questions meant that geometrically over 200 million possible "avenues" are possible.

As each module was completed, a number of trial runs were necessary in order to debug and edit the programs. The first program was completed in three months at a cost (for computer time only) of \$250.00. The next two programs were completed within two weeks at a cost of approximately \$75.00 for the computer time. Obviously, most of the complexities were overcome in the

programming of the first module. These developmental tasks complete, the three CAI-prompted invention modules were ready to be evaluated in a larger experiment.

The Experimental Procedures

Subjects. Students in four second semester English composition classes at the University of Texas at Austin volunteered to participate. The specific course, English 308, emphasized "reading persuasive and argumentative essays, and writing with the use of the aims and modes of discourse." No literature was taught; rhetorical principles were stressed. Basically, those students who elected to take this course were interested in improving their expository composition skills. All subjects selected this course over the other two options--a literature-based writing course and a pop culture-based writing course. A total of seventy-two subjects volunteered to participate and took the pretest, and a total of sixty-nine subjects completed the treatment and the posttest. The mean SAT verbal score for these sixty-nine students was 443.48. Their ECT mean score was 393.91. Their mean first-semester English G.P.A. was 2.46 on a four-point scale, and their mean high school percentile was 72.23. Sixty-seven subjects completed the follow-up composition

plan within the required time limit. Only the experimental groups wrote the internalization exercise and completed the attitude questionnaire; forty-eight subjects completed these instruments, five subjects being absent. The attrition through the composition plan was due to three subjects being unable to schedule the on-line practice session, the on-line posttest, and the writing of the composition plan within the two-week experimental phase.

Treatment. While the seventy-two subjects were assigned to four distinct English 308 sections, the treatments were randomly assigned to the classes. The slightly unequal number among the treatments resulted from the differences in class size as well as the number of subjects who voluntarily gave their consent. All subjects, including those in the control group, were aware that they were involved in an experiment involving computer-assisted instruction in invention. Those members in the control group were given the opportunity to use the computer programs after the pretest, the posttest, and the composition plan had been completed; three actually did so. To control for teacher variability, I presented to each of the four groups two, one-hour lectures about their heuristic strategy. The control group's lectures concerned the problem-solving

or creative process, i.e. "preparation, incubation, illumination, and verification." The control group's discussion remained general and experiential, whereas the experimental groups, by the end of the second lecture, were asking specific heuristic questions. The instructional materials used in these lectures consisted of class handouts on each of the heuristic sets (see Appendix D). These handouts showed some of the non-routine conditioned questions the students would answer when they logged in at the computer terminal.

During the week of the lectures, the experimental subjects were scheduled for an initial practice session. These thirty-minute practice sessions were conducted in order to familiarize the students with the operation of the Lear Siegler ALM-1 computer display terminal, a CRT. Specifically, the students were taught the keyboard characteristics, the function of the cursor control keys and special function keys (e.g., RETURN, SHIFT, SUBST), and the basic commands. The practice sessions also included a review of the invention program's instructions, the basic commands and the initial problem. At the conclusion of the practice session, the students were given an initial problem to solve using the ALM-1 program.

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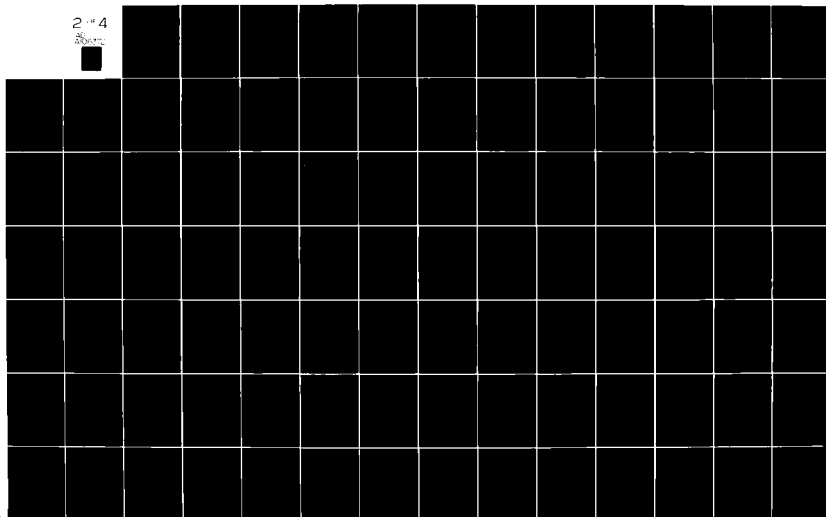
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The posttest administration began the following week. The motto for the posttest was "If you think it, type it!" The control group was told "If you think it, write it down." All the subjects in the experimental sections were logged on to the system by a member of the research team. After the first question appeared, they were timed for thirty minutes. The only encouragement came from the program itself. Two subjects had to be rescheduled for the posttest because the computer "crashed" after they had been logged in. The posttest for the control group was administered in class. Their instructions were to list any and all ideas they had about the topic of their research paper. They also had thirty minutes, and again there was no additional encouragement if they stopped writing before the thirty minute time limit expired.

After the posttest, all students were then assigned a composition plan (see Appendix E). As the assignment explained:

A composition plan is a brief, though suggestive, blueprint of your paper. Some plans may be as formal as an outline (complete with Roman numerals) or a paragraph by paragraph synopsis. Other plans are more informal: a list of main ideas arranged in some order of diminishing importance or graphic scattergrams (i.e., encircled ideas connected to each other.) Your assignment is to take your last list of

ideas and develop a plan for your research paper. Your plan is due two days from today.

The control group received this assignment immediately after the posttest. The experimental subjects received this assignment the day after their CAI treatment; they also received a printout of their thirty-minute session at the same time. Also, all students were told to spend no more than two hours completing this last assignment. The due date was later modified from two days to "within a week" for all students. As several students explained to the researchers, they needed more than forty-eight hours to think about their ideas. Another, perhaps more likely, reason for this schedule modification was that this particular assignment did not count toward their English course grade. Nevertheless, the one-week deadline seemed sufficient, though two students were unable to meet this amended deadline. Although some of the students asked for additional help with the writing of this plan, they were told "due to the experimental constraints" no help was available until the composition plan had been turned in.

Internalization. Testing for internalization of the heuristic was incorporated into the design in early 1979. While the short duration of the proposed experiment might have been, and may still be, a legitimate argument not to test for internalization, many humanists would remain unconvinced unless some attempt to grapple with the issue of internalization was made. In other words, the research may have been found valid but not particularly persuasive, especially to a humanistic audience. In his response to the pilot study, Richard M. Coe (1978) stressed the importance of an internalization hypothesis:

If composition is a humanistic discipline--or if writing is a craft, not just a skill reducible to a set of sub-skills--we must give writing students some understanding, not just immediate technical facility. Assuming your computer questions work (as I assume they will), I, as a humanistic composition teacher, need to know if they will give students some understanding of heuristic processes and if they are internalized, if there is carryover: do students eventually get to the point where they can use the Pentad without the mediation of your question-pool? do students eventually get to the point where they can invent when they do not have a computer handy? In other words, assuming that these computer programs do indeed improve the quality of certain writings, I want to know if they also help students to become more effective writers in the long run.

Largely because of such urging, three weeks after the experiment, the subjects in the experimental sections were asked to write ten questions from their "heuristic's" perspective about one of four subjects: inflation, jogging, music in Austin, or college academics. They had ten minutes to complete this exercise. Since the subjects in the control group were not taught a specific heuristic strategy, they did not participate in this test.

Attitude. After the internalization exercise, the experimental subjects were asked to complete an attitude questionnaire (see Appendix F). Twenty-five Likert items, four short answers, and a comment section were intended to gather the subjects' opinions about (1) the effectiveness or non-effectiveness of the CAI units, (2) the necessity of teaching invention, (3) the worth of a specific heuristic, and (4) suggestions for improving such prewriting instruction.

Measures

Validating the measures of quantitative and qualitative growth of ideas eventually became a crucial, nearly primary, focus of this research. The quantitative measure was derived from Walter Kintsch's research with propositional representations (1974). The qualitative measures synthesized features which Kinneavy (1971) and Odell (1977) emphasize in their descriptions of invention.

Quantity of Ideas. While Walter Kintsch in The Representation of Meaning in Memory (1974) admits that his "propositional representations" may or may not be "the proper level of analysis for the study of language and thought" (p. 5), his approach formulates the problem in a most useful way:

The problem can be formulated as "What is an idea?" or, more precisely, "How is an idea to be represented?" It is suggested here that propositions represent ideas, and that language (or imagery) expresses propositions, and hence ideas. Thinking occurs at the propositional level; language is the expression of thought. (p. 5)

Kintsch and his colleagues, therefore, are inquiring how ideas can be articulated through propositions. Those who disagree are in the unenviable position of defending ideas as "unarticulated, pre-propositional schemes of thought" (p. 5).

For this research, a reliable measure was needed to count the ideas; Kintsch's propositional system became the starting point, for he correlated surface representations with propositional analyses. Although he does not assign specific numeric values to the propositional analysis, the propositional elements are arranged in such a way that they could easily be summed and reported as a specific number of ideas. Such a scheme is illustrated in Figure 2.1 (the surface representation and the propositional analysis are Kintsch's [p. 13]; I contributed the "idea count" column). In the pilot study, these particular examples revealed some inconsistencies when six evaluators attempted to measure the quantity of ideas generated. These evaluators had difficulty using this guide; they reported that they could not consistently or easily determine a "number" from such a large variety of surface representations. There were just not enough examples; it was a burdensome tool at best. From their feedback, a transitional aid was obviously necessary,

<u>Surface Representation</u>	<u>Propositional Analysis</u>	<u>Idea Count</u>
John sleeps.	(SLEEP, JOHN)	2
Mary bakes a cake.	(BAKE, MARY, CAKE)	3
Freud	0	1
A robin is a bird.	(BIRD, ROBIN)	2
A bird has feathers.	(HAVE, BIRD, FEATHERS)	3
The man is sick.	(SICK, MAN)	2
If Mary trusts John, she is a fool.	(IF, (TRUST, MARY, JOHN), (FOOL, MARY)	4 <u>2</u> 6
	Total:	
The old man smiled and left the room.	(OLD, MAN)&(SMILE, MAN)& (LEAVE, MAN, ROOM)	3 <u>3</u> 6
	Total:	
Mary claimed that the old man smiled and left the room.	(CLAIM, MARY, @)& ((OLD, MAN)&(SMILE, MAN)& (LEAVE, MAN, ROOM)=@)	2 3 <u>3</u> 8
	Total	
The snow melts slowly.	(MELT, SNOW)&(SLOW, MELT)	3

Figure 2.1

PILOT PROPOSITIONAL ANALYSIS GUIDELINE

and, consequently, a systems approach to counting propositions and ideas was developed (Figure 2.2). The aim of this systems flowchart essentially was to nudge the intuition toward consistency. Indeed, Kintsch's work ultimately explores the deep, elemental representations of semantic density. However, developing a reliable and practical instrument for measuring the accumulation of semantic information should, I felt, dwell close, quite close, to the explicit surface representations.

The three evaluators who measured the quantity of ideas on the 138 tests in the final experiment obtained a interrater reliability of .98355 (see Table 2.1). One evaluator wrote afterwards, "I found it [Figure 2.2] very intuitive--after we made some consistency decisions about compounding points, i.e. NP& = [NP plus] preposition, etc. I can see proposition analysis as a way of determining scores on analysis scales under the category of 'meatiness' or sentence 'texture'. . . ." As a matter of interest, the evaluators' ten "consistency" decisions which were made during the two-hour training session were:

Table 2.1

MEANS, STANDARD DEVIATIONS, CORRELATIONS,
AND ALPHA RELIABILITY FOR
QUANTITATIVE EVALUATION

	Means	Std. Dev.
I	77.42754	66.17097
II	58.36957	45.90105
III	67.24638	55.82700

Correlation Matrix

	I	II	III
I	1.00000		
II	0.98171	1.00000	
III	0.98393	0.98610	1.00000

RELIABILITY Coefficients 3 Items

Alpha = 0.98355 Standardized Item Alpha = 0.99458

of cases = 138.0

1. prepositional phrase alone = 1
2. adjective and a single noun = 2
3. bonus for single compounding = 1
4. noun and prepositional phrase (no adjectives) = 2
5. "on topic" means "about the subject matter"
6. "rich" noun phrases ("rich" = adjectives and prepositional phrases) treat as 3 + 1 bonus
7. I think, I feel, etc. = 0 (rationale: off-topic)
8. imperatives and questions treat as independent clauses
9. why, what questions = noun phrase plus automatically
10. simple relative clauses (that and which) should be isolated but counted as independent clauses initially.

Finally, the most important guideline to the evaluators was to be as consistent as possible to their own interpretation of the systems approach. As their instructions read, "The basic aim here is to look for topic-related, dependent or independent clauses, noun phrases, verb phrases, nouns, and verbs--assigning each

unit a numeric value. The hidden agenda is an attempt to bring quantitative propositional analysis closer to the surface structure: practicality being an important part of this exercise."

Quality of Ideas. When Robert Pirsig's (1974) Phaedrus nears his major insight in Zen and the Art of Motorcycle Maintenance about the nature of quality, he writes "Quality is not a thing. It is an event." A moment later, he elaborates, "Quality is the event at which awareness of both subjects and objects is made possible" (p. 239). This particular definition of quality and the implicit definition of invention as a method of discovering or becoming aware of relationships between subjects and objects share this notion of process. Perhaps the major premise of any inquiry ought to be to discover quality. Still, measuring the growth of things is one matter, but measuring the growth of an event quite another, particularly when that event occurs in the mind.

Nevertheless, as these invention modules were intended to stimulate a growth in the sophistication of the insights, to encourage a visible change in the comprehensiveness or range of ideas, to prompt an observable, linguistically-cued interaction between a heuristic and a subject, and to increase the overall "quality" of a list of ideas about an individual topic, qualitative measures were formulated. Evaluation using these measures would attempt to estimate on a five-point continuum the subjects' performances in terms of their insightfulness, their comprehensiveness, their intellectual processing, and their overall sophistication. Later, for the composition plan's qualitative evaluation, arrangement as "structuring principle" was partialled out of the comprehensiveness category; also, intellectual processing was dropped and two categories--maturity and helpfulness--considered in its place. Since the composition plan was a single-test, dependent variable, a four-point continuum prevented the evaluators from collapsing scores toward the middle.

The qualitative rationale and first two posttest criteria--insightfulness and comprehensiveness--were primarily synthesized from Kinneavy's (1971) sections on the logic of the reference/informative aim and the persuasive aim of discourse. Factuality and surprise value were incorporated into the first measure along with those "facts" in persuasion which are "put to work to prove a specific thesis" (p. 253). While Kinneavy admits to dissolving the "ostensible simplicity of the concept of factuality" into complexity, he emphasizes verification, and he writes, "Factual verifiability is established by examining the universe, or by what is usually called empirical verification" (p. 130). Regarding surprise value, however, Kinneavy cautions, "Measurement of the sort of surprise in any kind of quantified or objective logical norms still seems quite unattainable" (p. 134). Nevertheless, surprising, original, and "inventive" information is usually strikingly visible in freshman discourse.

About "comprehensiveness," Kinneavy suggests:

A topic about which information is desired can be considered to have a context of possible factual expectancies--the average reader interested in such a topic would presumably want certain implicit questions about a topic satisfactorily answered. These expectancies constitute the "universe of discourse" about a

topic. When they have been adequately covered, information about the topic can be considered to be comprehensive. (p. 133)

Thus the evaluation would attempt to determine how well the subjects' lists of ideas anticipated the reader's expectations. Obviously, a heuristically-guided inquiry ought to ask writers to determine the "possible factual expectencies" which constitute the particular universe of discourse about their subjects.

Therefore, for the first two qualitative guidelines, the three evaluators made their judgments based on these definitions:

"Evidence of Factuality, Surprise Value, Interest, Inventiveness, Insightfulness"--Evaluate the writer's discoveries. Does the writer appear to use the truth? Does the writer discover new, specific information? Does the writer demonstrate interest by using a particular slant, a point of view? Has the writer attempted some "lateral thinking," some creative responses? Is there any evidence of an "epiphany" or an "ah ha!"

"Evidence of Scope, Comprehensiveness, Relative Completeness"--Evaluate the writer's perception of the total topic. Has the writer decided on the range of the topic? Is this range of ideas or scope appropriate for a research paper? Does the writer seem to use some structuring principle (i.e. alphabetical, numerical = low value systems; chronological, spatial = mid-value systems; classificatory, evaluative, deductive systems = high value systems).

The guideline for the evaluating the quality of the subjects' intellectual processing sought for the evaluator to attend to surface features which cued intellectual interaction. Lee Odell in "Measuring Changes in Intellectual Processes as One Dimension of Growth of Writing" (1977) makes these three assumptions about gauging intellectual change.

1. Although thinking is a complex activity, the number of conscious mental activities involved in thinking may not be indefinite; the relatively small number of intellectual processes identified by Kenneth Pike . . . lets us describe much of what people do consciously when they examine information, attitudes, or concepts.
2. We can identify linguistic cues--specific features of the surface structure of written or spoken language--that will help us determine what intellectual processes a writer is using.
3. In order to improve students' writing, we will have to determine what intellectual processes we want students to begin using, or use differently; to make this determination, we must have a good sense of how they are presently functioning. (p. 108)

These assumptions enable Odell to describe in some detail the intellectual significance of "occasionally ambiguous" linguistic cues. For this third qualitative guideline, the three evaluators determined a score based on the following definition:

"Evidence of Intellectual Processes (focus, contrast, classification, change, sequence)"-- Evaluate the writer's apparent mental agility by attending to linguistic cues. Focus = useful subject selections? Contrast = extensions to ideas by connectors, comparative/superlative forms, negatives, negative affixes, lexicon (i.e. difference, paradox, etc.)? Classification = syntax (NPs suggesting class), for example, for example; lexicon (i.e. similar, resemble, class, category, parts)? Change = VPs with change or synonym (realize, become aware, stopped thinking about, began noticing, etc.)? Sequence = time (i.e. when, subsequently, earlier, etc.), cause-effect (because, since).

Finally, the evaluators were also asked to report their overall impression based upon the following definition:

"Overall Impression"--Probably an average of the above three categories, but you may also consider the writer's effort, the complexity of the topic, the timed nature of the assignment, or whatever you wish. Call it "holistic" latitude of wise, intelligent, professional evaluators.

The evaluation of the composition plans' quality added these three definitions:

"Maturity"--Evaluate the complexity of the topic and the writer's attitude toward the topic. Objectiveness and overall tone may be useful guidelines. How thorough is the analysis?

"Arrangement"--Evaluate whether or not the writer has selected an appropriate arrangement for the research paper. How true will the

writer be to the overall structural principle in the plan? Or do you suspect there will have to be major changes?

"Helpfulness"--Evaluate whether or not the writer will actually use this plan as a "springboard" for the research phase. Does the plan help the student understand what he or she must now find out?

During a two-hour training session, the three quality evaluators discussed each category, clarified some of the toughest distinctions (e.g., valued "structuring principles"), and practiced evaluating samples drawn from the earlier pilot study.

The reliability scores for the pretest-posttest evaluation are presented in Table 2.2. The greatest agreement was found in their judgments about evidence of factuality, surprise value, insightfulness ($\text{Alpha}=.83072$) and their overall impression ($\text{Alpha}=.81481$). The reliability scales for the composition plan evaluation are reported in Table 2.3. The strongest reliability score here was in the "comprehensiveness" category ($\text{Alpha}=.80305$); the second strongest agreement was in "arrangement" ($\text{Alpha}=.79076$). The least agreed upon category was "maturity" ($\text{Alpha}=.68106$).

Table 2.2
ALPHA RELIABILITIES FOR PRETEST/POSTTEST
QUALITATIVE EVALUATION

	RELIABILITY Coefficients	3 Items
"Factuality, Surprise Value, Insightfulness"	Alpha = 0.83072	Standardized Item Alpha = 0.84099
"Comprehensiveness"	Alpha = 0.75616	Standardized Item Alpha = 0.76489
"Intellectual Processing"	Alpha = 0.79591	Standardized Item Alpha = 0.80076
"Overall Impression"	Alpha = 0.81481	Standardized Item Alpha = 0.82538

of cases = 138.0

Table 2.3
ALPHA RELIABILITIES FOR COMPOSITION PLAN
QUALITATIVE EVALUATION

	RELIABILITY Coefficients	3 Items
"Insightfulness"	Alpha = 0.76117	Standardized Item Alpha = 0.76238
"Comprehensiveness"	Alpha = 0.80305	Standardized Item Alpha = 0.80434
"Maturity"	Alpha = 0.68106	Standardized Item Alpha = 0.68175
"Arrangement"	Alpha = 0.79076	Standardized Item Alpha = 0.79067
"Helpfulness"	Alpha = 0.71547	Standardized Item Alpha = 0.73240
"Overall Impression"	Alpha = 0.74093	Standardized Item Alpha = 0.74936

of cases = 69.0

Evaluating Heuristic Internalization. The same evaluators who measured the quality of the invention sequences also evaluated heuristic internalization. They were asked to read the questions and report what heuristic method they believed the student used to write these questions. In Table 2.4, the two reliability scales illustrate (1) overall agreement with the intended heuristic method, and (2) the reliability among the evaluators themselves.

Table 2.4
CORRELATION MATRIX AND ALPHA RELIABILITIES
FOR THE EVALUATION OF HEURISTIC
INTERNALIZATION

Correlation Matrix				
	Heuristic	I	II	III
Heuristic	1.00000			
I	0.67727	1.00000		
II	0.95266	0.70360	1.00000	
III	0.62213	0.51172	0.62335	1.00000
RELIABILITY Coefficients				
4 Items				
Alpha = 0.89733	Standardized Item Alpha = 0.89551			
3 Items				
Alpha = 0.82691	Standardized Item Alpha = 0.82608			
# of cases = 45.0				

Although this chapter reports an extremely detailed methodology, the general approach can be summarized briefly: an attempt to calculate accurately the quantitative and qualitative growth of ideas among sixty-nine freshman writers in four groups--three of which inquired into the nature of their subject using three different, computer-prompted, heuristic strategies.

Surely some revelations are at hand.

CHAPTER 3

Findings

Patrick Suppes (1973) once selected a passage from the closing of Hume's Enquires Concerning Human Understanding as a text for one of his educational "sermons." Hume's canonical lines seem appropriate here:

If we take in our hand any volume . . . let us ask, Does it contain any abstract reasoning concerning quantity or number? No. Does it contain any experimental reasoning concerning matters of fact and existence? No. Commit it then to the flames: for it can contain nothing but sophistry and illusion.
(p. 6)

Hume's hard line empiricism has its time and its place, or so Suppes contended in his article, "Facts and Fantasies of Education." This chapter is such a place.

Empirical results about invention and cognitive strategies, however, are bound to be perplexing since they must measure what our intuitions tell us is unmeasurable. Evaluating ideas, after all, is much different than counting a horse's teeth. What this inductive paradox may testify to, I hope, is that important questions are being asked. At least, the flammable notions found here are empirically based.

The following data analyses present findings of the ten hypotheses. The statistical analyses were interactively completed using The University of Pittsburgh's Statistical Package for the Social Sciences - 10 (SPSS-10, 24 November 1977.)

Results for Hypothesis One -- Attitude

Since the attitude results are not analyzed separately for the three heuristic treatments, the major question actually being asked is: "How did freshman composition students like computer-assisted invention?" Overall, the findings were positive. Table 3.1 illustrates the absolute mean scores for each of the twenty-five items listed in Appendix F, ranked on a

five-point Likert scale, and the relative percentages of the five categories.

Generalizing over all of the subjects, the strongest agreement was with statements one ("I think freshman college students generally need help with prewriting"), nine ("The computer program made me think"), and twenty-four ("From experiencing this instruction, I understand how heuristic questions could be applied to lots of topics"). The strongest disagreement was registered in response to this statement: "The entire experience was useless". All of these results demonstrated favorable attitudes toward these particular aspects of the CAI treatment. The grand mean for all twenty-five questions was 3.6404, slightly above the hypothesized 3.5 criterion.

Results of Hypothesis Two--Rates of Completing Treatment

Hypothesis two--that over ninety-five percent of the experimental subjects would sustain the invention dialogue under the imposed experimental conditions for thirty minutes--was supported. Fifty-two of the fifty-three subjects (98.1%) worked until the research assistant had them command the program to "stop!" Across the experimental groups, all of the subjects in the Aristotelian and Burke groups worked for the posttest's

Table 3.1
Attitude Means and Likert Percentages

Statement	Mean	Percentages					Positive/ Negative Statement
		SA	A	UN	D	SD*	
1	4.33	43.7	50	4.2	0	2.1	P
2	3.10	16.7	20.8	27.1	27.1	8.2	P
3	3.92	31.2	37.5	25	4.2	2.1	P
4	3.64	20.8	39.6	25	4.2	2.1	P
5	4.10	45.8	31.2	14.6	4.2	4.2	P
6	3.60	16.7	45.8	20.8	14.6	2.1	P
7	3.64	14.6	47.9	27.1	8.3	2.1	P
8	3.79	10.4	68.8	10.4	10.4	0	P
9	4.35	39.6	56.2	4.2	0	0	P
10	2.97	14.6	20.8	20.8	35.4	8.3	N
11	3.48	8.3	39.6	45.8	4.2	2.1	P
12	3.71	14.6	56.2	14.6	14.6	0	P
13	3.04	6.2	27.1	35.4	27.1	4.2	P
14	4.42	0	0	6.2	45.8	47.9	N
15	3.81	14.6	64.6	10.4	8.3	2.1	P
16	3.96	0	2.1	16.7	64.6	16.7	N
17	3.60	6.2	16.7	6.2	52.1	18.8	N
18	2.98	0	33.3	33.3	31.2	2.1	P
19	3.69	10.4	56.2	25	8.3	0	P
20	2.58	8.2	14.6	22.9	35.4	18.8	P
21	3.25	8.3	47.9	14.6	18.8	10.4	P
22	3.77	16.7	56.2	16.7	8.3	2.1	P
23	3.62	4.2	70.8	12.5	8.3	4.2	P
24	4.00	16.7	72.9	6.2	2.1	2.1	P
25	3.66	6.2	62.5	22.9	8.3	0	P

Grand Mean=3.6404

*SA--strongly agree
A--agree
UN--undecided
D--disagree
SD--strongly disagree

duration; the one subject who worked for twenty minutes on the tagmemic questions reported that she was being asked to answer the identical questions she had seen earlier in the practice session. Though the probability for this happening is low, less than one percent, it may have happened. Certainly, she was being asked three types of questions--particle, wave, and field. Copies of the practice session were not printed due to budget limitations, so it was impossible to verify the repetition. In terms of the percentage of interaction treatment minutes, the students worked for 1580 out of a possible 1590 treatment minutes, or 99.4% of the allotted time. An encouraging descriptive finding was that several students objected to ending their sessions; they wished to continue the inquiry and reported that thirty minutes was too short a time to think about their topic. This specific complaint was not heard from the students in the control group; if anything, thirty minutes seemed a long time for them.

Results of Hypothesis Three--Construct Validity

For the three experimental groups, the number of times they answered a question once and the number of times they extended their answers were counted. All of the groups exceeded the hypothesized criteria for answering and elaborating their answers. The specific hypothesis was that experimental subjects would answer seventy-five percent of the non-data conditioned questions presented in the thirty minute posttest and extend their inquiry at least sixty percent of the time. The Aristotle group answered their questions 97.25% of the time and extended their inquiry 90.02% of the time. The subjects undergoing the Burke treatment answered their first question 91.24% of the time and elaborated their answers 69.25% of the time. The tagmemic subjects answered their first questions 92.28% of the time and gave additional information 77.73% of the time.

Results of the analysis of variance on these data indicated no significant difference among the groups regarding their ability to answer the heuristic question the first time ($F=1.072$, $p=.350$; see Table 3.2); however, a statistically significant difference among the groups on their elaboration performance was discovered ($F=3.927$, $p=.026$; see Table 3.3). Additionally, an analysis of covariance by group with

Table 3.2
ANALYSIS OF VARIANCE FOR HEURISTIC ANSWERING RATE
AMONG THREE EXPERIMENTAL GROUPS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Main effects	375.86	2	187.593	1.072	0.350
Group	375.186	2	187.593	1.072	0.350
Explained	375.186	2	187.593	1.072	0.350
Residual	8750.625	50	175.013		
Total	9125.811	52	175.496		

33 cases were processed.

Table 3.3
ANALYSIS OF VARIANCE FOR HEURISTIC ELABORATION RATE
AMONG THREE EXPERIMENTAL GROUPS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Main effects	3912.391	2	1956.196	3.927	0.026
Group	3912.391	2	1956.196	3.927	0.026
Explained	3912.391	2	1956.196	3.927	0.026
Residual	24908.477	50	498.170		
Total	28820.868	52	554.247		

33 cases were processed.

the SAT verbal score (two missing cases) as the covariate verified the above significant finding ($F=3.535$, $p=.037$; see Table 3.4). A multiple classification analysis of the analysis of covariance (Table 3.5) was performed to confirm the observed trends seen in the raw percentage performances, i.e. the topoi group most easily extended their answers and the pentad group, for possible reasons discussed in the next chapter, did not greatly elaborate their initial remarks.

Results for Hypothesis Four--Individual Quantitative Gains

After the total proposition count had been completed, the fifteen-minute pretest score was doubled so that it could be more appropriately compared to the individual's thirty-minute posttest score. Tables 3.6 to 3.9 present these results in the four groups. Briefly, though, all three experimental groups showed statistically significant gains, while the control group suffered a statistically significant decrease in the quantity of ideas. In the pretest, the nineteen members of the topic group listed an average of 35.5789 ideas; the seventeen members of the Burke group listed 30.7647

Table 3.4
ANALYSIS OF COVARIANCE FOR HEURISTIC ELABORATION RATE
AMONG THREE EXPERIMENTAL GROUPS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	352.668	1	352.668	0.691	0.410
SAT Verbal	352.668	1	352.668	0.691	0.410
Main effects	3606.445	2	1803.222	3.535	0.037
Group	3606.445	2	1803.223	3.535	0.037
Explained	3959.113	3	1319.704	2.587	0.064
Residual	23975.868	47	510.125		
Total	27934.980	50	558.700		

Covariate	Raw regression coefficient
SATV	.0.036

53 cases were processed.
2 cases (3.8%) were missing.

Table 3.5
MULTIPLE CLASSIFICATION ANALYSIS FOR HEURISTIC ELABORATION RATE
AMONG THREE EXPERIMENTAL GROUPS

Grand mean = 80.02							
Variable + category	N	Unadjusted		Adjusted for		Adjusted for	
		Dev'n	Eta	Dev'n	Beta	independents	- covariates
Group						Dev'n	Beta
Aristotle	19	9.93				9.81	
Burke	17	-10.78				-10.63	
Tagmemic	15	-0.35				-0.12	
			0.37				0.36
Multiple R squared							.142
Multiple R							.376

Table 3.6
RESULTS OF TWO-TAILED T-TEST FOR CORRELATED SAMPLES ON QUANTITY
OF IDEAS WITHIN ARISTOTLE GROUP

VARIABLE	NUMBER OF CASES	MEAN	STANDARD DEVIATION	STANDARD ERROR	(DIFFERENCE) MEAN	STANDARD DEVIATION	STANDARD ERROR
Pretest	19	35.5789	12.959	2.973	-90.3684	47.321	10.856
Posttest		125.9474	46.741	10.723			
Adjusted Pretest	19	71.1579	25.917	5.946	-54.7895	51.280	11.764
Posttest		125.9474	46.741	10.723			

	CORR.	2-TAIL PROB.	T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.
table (cont.)	0.094	0.703	-8.32	18	0.000
	0.094	0.703	-4.66	18	0.000

Table 3.7
RESULTS OF TWO-TAILED T-TEST FOR CORRELATED SAMPLES ON QUANTITY OF IDEAS
WITHIN BURKE GROUP

VARIABLE	NUMBER OF CASES	MEAN	STANDARD DEVIATION	STANDARD ERROR	(DIFFERENCE) MEAN	STANDARD DEVIATION	STANDARD ERROR
Pretest	17	30.7647	19.842	4.812	-102.4118	57.724	14.000
Posttest		133.1765	54.985	13.336			
Adjusted Pretest	17	61.5294	39.683	9.625	-71.6471	66.543	16.139
Posttest		133.1765	54.985	13.336			

	CORR.	2-TAIL PROB.	T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.
table (cont.)	0.039	0.882	-7.32	16	0.000
	0.039	0.882	-4.44	16	0.000

Table 3.8
RESULTS OF TWO-TAILED T-TEST FOR CORRELATED SAMPLES ON QUANTITY
OF UNKAS WITHIN TACNEMIC GROUP

VARIABLE	NUMBER OF CASES	MEAN	STANDARD DEVIATION	STANDARD ERROR	(DIFFERENCE) MEAN	STANDARD DEVIATION	STANDARD ERROR
Protest	17	27.2353	14.977	3.633	-80.4118	63.366	15.369
Posttest		107.6471	55.851	13.546			
Adjusted Protest	17	54.4706	29.954	7.265	-53.1785	73.211	17.756
Posttest		107.6471	55.851	13.546			

table (cont.)

CORR.	2-TAIL PROB.	T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.
-0.401	0.110	-5.23	16	0.000
-0.401	0.110	-2.99	16	0.009

Table J.9
RESULTS OF TWO-TAILED T-TEST FOR CORRELATED SAMPLES ON QUANTITY
OF IDEAS WITHIN CONTROL GROUP

VARIABLE	NUMBER OF CASES	MEAN	STANDARD DEVIATION	STANDARD ERROR	(DIFFERENCE) MEAN	STANDARD DEVIATION	STANDARD ERROR
Pretest	16	29.4375	12.011	3.003	-15.5625	15.196	3.799
Posttest		45.0000	17.154	4.289			
Adjusted Pretest	16	58.8750	24.022	6.005	13.8750	21.357	5.339
Posttest		45.0000	17.154	4.289			

	CORR.	2-TAIL PROB.	T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.
Table (cont.)	0.504	0.047	-4.10	15	0.001
	0.504	0.047	2.60	15	0.020*

*Represents a significant decrease.

ideas; the seventeen students in the tagmemic class listed an average of 27.2353 ideas; and the sixteen students in the control class wrote an average of 29.4375 ideas in the allotted fifteen minutes. In the posttest, the members of the Burke class wrote an average of 133.1765 ideas per student; those students in the Aristotle class wrote an average of 125.9474 ideas; the individuals in the tagmemic group wrote 107.6471 ideas per student. The control group, interestingly, wrote an average of 45 ideas per student in the thirty minutes, not even double the ideas they were able to write in the fifteen-minute exercise. The slight edge which the Burke group achieved over the other experimental groups as well as the decline of ideas for the control group will be analyzed more precisely in the results section for hypothesis seven.

Results of Hypothesis Five--Individual Qualitative Gains

A t-test for correlated samples found that all individuals including those in the control group made qualitative gains, though the gains in the control group lagged behind the individual gains experienced by those in the experimental groups. No adjustments were made for the time differences. As Table 3.10 illustrates, the "factuality, surprise value, insightfulness" category saw all individuals make a statistically significant increase ($p=.000^*$ for the experimental groups; $p=.011$ for the control group). The comprehensiveness category, reported on Table 3.11, saw a statistically significant gain among the members of the three experimental groups ($p=.000$ for the Aristotle and tagmemic treatment; $p=.001$ for the Burke treatment). In this category, however, the control group's individual gains failed to reach significance ($p=.177$). The category regarding the evidence of the intellectual processing (see Table 3.12) again saw significant individual gains ($p=.000$) in all experimental groups. However, the control group's individual performances approached but did not reach a statistically significant figure ($p=.052$). Table 3.13 reports the results of the

* The SPSS-10 program calculates significance only to three decimal places.

Table 3.10

RESULTS OF TWO-TAILED T-TEST FOR CORRELATED SAMPLES ON FACTUALITY,
SURPRISE VALUE, AND INSIGHTFULNESS WITHIN EACH GROUP

GROUP	VARIABLE	NUMBER OF CASES	MEAN	STANDARD DEVIATION	STANDARD ERROR	(DIFFERENCE) MEAN	STANDARD DEVIATION	STANDARD ERROR
Aristotle	Pretest	19	5.5263	2.195	0.504	-4.6842	2.583	0.593
	Posttest		10.2105	2.299	0.527			
Burke	Pretest	17	4.6471	1.766	0.428	-4.4118	2.830	0.686
	Posttest		9.0588	2.277	0.552			
Tagmemic	Pretest	17	4.4118	1.583	0.384	-4.6471	3.408	0.827
	Posttest		9.0588	2.384	0.578			
Control	Pretest	16	4.5625	1.672	0.418	-1.3750	1.893	0.473
	Posttest		5.9375	1.879	0.470			

	CORR.	2-WAY PROB.	T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.
Aristotle...	0.340	0.154	-7.90	18	0.000
Burke...	0.037	0.889	-0.43	16	0.000
Tagmemic...	-0.454	0.067	-5.62	16	0.000
Control...	0.436	0.091	-2.91	15	0.011

table (cont.)

Table 3.11
RESULTS OF TWO-TAILED T-TEST FOR CORRELATED SAMPLES ON
COMPREHENSIVENESS WITHIN EACH GROUP

GROUP	VARIABLE	NUMBER OF CASES	MEAN	STANDARD DEVIATION	STANDARD ERROR	(DIFFERENCE) MEAN	STANDARD DEVIATION	STANDARD ERROR
Aristotle	Pretest	19	6.0526	2.147	0.493	-3.8947	3.398	0.779
	Posttest		9.9474	2.697	0.619			
Burke	Pretest	17	5.1765	2.069	0.502	-3.3529	3.220	0.781
	Posttest		8.5294	2.503	0.607			
Tagmemic	Pretest	17	4.3529	1.693	0.411	-4.0588	3.631	0.881
	Posttest		8.4118	2.599	0.630			
Control	Pretest	16	5.3750	2.217	0.554	-0.9375	2.845	0.661
	Posttest		6.3125	2.549	0.637			

		(XRR)	2-WAY PROB.	T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.
Table (cont.)	Aristotle...	0.029	0.905	-5.00	18	0.000
	Burke...	0.017	0.948	-4.29	16	0.001
	Tagmemic...	-0.404	0.108	-4.61	16	0.000
	Control...	0.391	0.135	-1.42	15	0.177

Table 3.12

RESULTS OF TWO-TAILED T-TEST FOR CORRELATED SAMPLES ON EVIDENCE
OF INTELLECTUAL PROCESSING WITHIN EACH GROUP

GROUP	VARIABLE	NUMBER OF CASES	MEAN	STANDARD DEVIATION	STANDARD ERROR	(DIFFERENCE) MEAN	STANDARD DEVIATION	STANDARD ERROR
Aristotle	Pretest	19	5.8947	1.792	0.411	-4.4737	2.220	0.509
	Posttest		10.3684	2.432	0.558			
	Pretest	16	5.5000	1.414	0.354	-1.0625	2.016	0.504
Burke	Posttest		6.5625	2.128	0.532			
	Pretest	17	5.4118	1.770	0.429	-3.7059	2.443	0.593
	Posttest		9.1176	2.118	0.514			
Tagmemic	Pretest	17	4.4706	1.663	0.403	-5.4706	3.448	0.836
	Posttest		9.9412	2.461	0.597			

table (cont.)	CORR.	2-WAY PROB.	T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.
Aristotle...	0.481	0.037	-8.78	18	0.000
Burke...	0.220	0.397	-6.25	16	0.000
Tagmemic...	-0.375	0.139	-6.54	16	0.000
Control...	0.410	0.115	-2.11	15	0.052

Table 3.13
RESULTS OF TWO-TAILED T-TEST FOR CORRELATED SAMPLES ON
OVERALL QUALITY WITHIN EACH GROUP

GROUP	VARIABLE	NUMBER OF CASES	MEAN	STANDARD DEVIATION	STANDARD ERROR	(DIFFERENCE) MEAN	STANDARD DEVIATION	STANDARD ERROR
Aristotle	Pretest	19	5.5203	1.806	0.414	-4.5789	2.545	0.584
	Posttest		10.1053	2.492	0.572			
	Pretest		4.7059	1.896	0.460			
Burke	Pretest	17				-3.7847	3.011	0.730
	Posttest		8.4706	2.478	0.601			
	Pretest		4.3529	1.618	0.392			
Tagmeme	Pretest	17				-4.7059	3.771	0.915
	Posttest		9.0588	2.703	0.656			
	Pretest		4.7500	1.949	0.487			
Control	Pretest	16				-1.2500	2.352	0.588
	Posttest		6.0000	2.000	0.500			

		2-WAY CORR.	2-WAY PROB.	T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.
Table (cont)	Aristotle...	0.333	0.164	-7.84	18	0.000
	Burke...	0.071	0.786	-5.16	16	0.000
	Tagmeme...	-0.491	0.045	-5.15	16	0.000
	Control...	0.291	0.275	-2.13	15	0.051

overall quality of these pre-post lists of ideas. Again, all of the experimental treatments yielded a $p=.000$ significant level while the control group's individual performances did not quite yield a significant number ($p=.051$).

Perhaps, it not surprising that an increase in the treatment time "ought" to mean an increase in the quality of what is written. These results indicate, in a strict inferential model at least, that facts and insights increase for individuals, but that the comprehensiveness of their inquiry, the flexibility of their intellectual repertoire, and the net qualitative effect could have as easily occurred by chance. What this finding may suggest is that the time spent stimulating invention perhaps should be devoted to comprehensive systems and heuristics which immediately encourage interaction, but more of this in the following chapter. Let it suffice to say that since gains occurred in all groups, the more discriminating qualitative hypothesis is hypothesis eight, since it attempts to show the extent of the differences among the groups.

Results of Hypothesis Six--Heuristic Internalization

The results of the internalization hypothesis showed that members of each experimental group did indeed remember and could generate some recognizable heuristic questions. The mean performances on a four-point scale were 3.7 for the Aristotle treatment, 3.41 for the Burke treatment, and 3.14 for the tagmemic treatment. An analysis of covariance with the SAT verbal score and the ECT score as the covariables (see Table 3.14), however, showed no significant difference among the groups ($F=1.783$, $p=.182$). A multiple classification analysis (see Table 3.15) indicated a slight trend favoring the internalization or the "clear-cut" recognizability of Aristotelian topoi, a finding which will be elaborated upon in the next chapter. The trend also showed that either the tagmemic method was the most difficult heuristic for generating "recognizable" questions or that the evaluators had the most difficulty recognizing students' "tagmemic" renditions. Finally, the Burke heuristic approach remained in the middle--surprisingly since the who, what, where, when, and why strategy was assumed to be the most familiar.

Table 3.14
ANALYSIS OF COVARIANCE FOR HEURISTIC INTERNALIZATION
AMONG THREE EXPERIMENTAL GROUPS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	2.391	2	1.195	1.569	0.221
SATV	0.877	1	0.877	1.151	0.290
ECT	2.388	1	2.388	3.136	0.085
Main effects	2.715	2	1.358	1.783	0.182
Groups	2.715	2	1.358	1.783	0.182
Explained	5.108	4	1.276	1.676	0.176
Residual	28.941	38	0.762		
Total	34.047	42	0.811		

45 cases were processed
18 cases (19.9%) were missing.

Table 3.15
MULTIPLE CLASSIFICATION ANALYSIS FOR HEURISTIC INTERNALIZATION
AMONG THREE EXPERIMENTAL GROUPS

Grand mean = 4.72						
Variable + category	N	Unadjusted Dev'n	Eta	Adjusted for independents Dev'n	Beta	Adjusted for independents + covariates Dev'n Beta
Groups						
Aristotle	16	0.32				0.29
Burke	15	-0.04				-0.03
Tagmemic	12	-0.37				-0.36
			0.31			0.29
Multiple R squared						.150
Multiple R						.387

Results of Hypothesis Seven--Quantity Among Groups

Hypothesis seven--that there is no difference in the quantitative performance on a pretest and a posttest among the four groups--was rejected, for statistically significant differences were discovered among the four groups. First of all, though, an analysis of covariance on the pretest performance, with the SAT verbal and the ECT scores as covariables, showed no statistically significant difference among the four groups ($F=1.050$, $p=.378$; see Table 3.16). Moreover, a multiple classification analysis (Table 3.17) ranked the quantitative pretest performances as follows: (1) Aristotle, (2) control, (3) Burke, and (4) tagmemic.

As Table 3.18 illustrates, the results of an analysis of covariance, with the SAT verbal and the ECT scores as covariables, on the posttest was statistically significant ($F=12.334$, $p=.000$). The multiple classification analysis in Table 3.19 shows that the performance ranks switched from the pretest: now (1) Burke, (2) Aristotle, (3) tagmemic, and (4) control. Even more important, this significance level is gained because the control group bears the entire burden of both the unadjusted deviation and the adjusted deviation. Consequently, as the Beta illustrates, the

Table 3.16
ANALYSIS OF COVARIANCE FOR PRETEST QUANTITY OF IDEAS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	1549.010	2	774.505	3.583	0.034
SATV	121.033	1	121.033	0.560	0.457
ECT	430.028	1	430.028	1.990	0.164
Main effects	680.898	3	226.966	1.050	0.378
Groups	680.898	3	226.966	1.050	0.378
Explained	2229.908	5	445.982	2.063	0.084
Residual	11887.863	35	218.143		
Total	14117.771	60	235.296		

69 cases were processed
8 cases (11.6%) were missing.

Table 3.17
MULTIPLE CLASSIFICATION ANALYSIS FOR PRETEST QUANTITY OF IDEAS

Grand mean = 30.34						
Variable + category	N	Unadjusted Dev'n	Eta	Adjusted for independents Dev'n	Beta	Adjusted for independents + covariates Dev'n
Groups						
Aristotle	18	5.38				4.87
Burke	15	-2.28				-0.72
Tagmemic	14	-3.27				-1.57
Control	14	-1.20				-3.92
			0.23			0.22
Multiple R squared						.158
Multiple R						.397

Table 3.18
ANALYSIS OF COVARIANCE FOR POSTTEST QUANTITY OF IDEAS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	3345.395	2	1672.698	0.952	0.392
SATV	2811.602	1	2811.602	1.600	0.211
ECT	334.314	1	334.314	0.190	0.664
Main effects	65013.023	3	21671.008	12.334	0.000
Groups	65013.023	3	21671.008	12.334	0.000
Explained	68358.419	5	13671.684	7.781	0.000
Residual	96639.024	55	1757.073		
Total	164997.443	60	2749.957		

69 cases were processed.
9 cases (11.6%) were missing.

Table 3.19
MULTIPLE CLASSIFICATION ANALYSIS FOR POSTTEST QUANTITY OF IDEAS

Grand mean = 98.67					
Variable - category	N	Unadjusted Dev'n	Eta	Adjusted for independents Dev'n	Beta
Groups					
Aristotle	18	21.55		21.68	
Burke	15	26.39		27.63	
Tagmemic	14	0.90		2.18	
Control	14	-56.89		-59.66	
			0.62		0.63
Multiple R squared					.414
Multiple R					.644

groups are more unlike each other after the covariate adjustments. This finding may be the one finding in which we may have the "greatest confidence." The CAI-units stimulated lots of ideas, many more than students without this treatment were able to generate.

Among the three experimental groups, an analysis of covariance found the pretest main effects not statistically significant ($F=1.006$; $p=.373$; see Table 3.20); the multiple classification analysis here (Table 3.21) ranked the pretest performances: (1) Aristotle, (2) Burke, and (3) tagmemics. The analysis of covariance found the posttest difference for main effects even less significant ($F=.805$; $p=.453$; see Table 3.22); the multiple classification analysis in Table 3.23 revealing these changed rankings: (1) Burke, (2) Aristotle, and (3) tagmemics. The identical Beta shows that these three groups have virtually remained unchanged after the covariate adjustment.

Table 3.20

ANALYSIS OF COVARIANCE FOR PRETEST QUANTITY OF IDEAS
AMONG THREE EXPERIMENTAL GROUPS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	1212.504	1	1212.504	4.890	0.032
SATV	1212.504	1	1212.504	4.890	0.032
Main effects	498.770	2	249.385	1.006	0.373
Groups	498.770	2	249.385	1.006	0.373
Explained	1711.274	3	570.425	2.301	0.089
Residual	11652.766	47	247.931		
Total	13364.039	50	267.281		

Covariate Raw regression coefficient

SATV 0.067

53 cases were processed.
2 cases (3.8%) were missing.

Table 3.21

MULTIPLE CLASSIFICATION ANALYSIS FOR PRETEST QUANTITY OF IDEAS
AMONG THREE EXPERIMENTAL GROUPS

Grand mean = 31.20					
Variable - category	N	Unadjusted Dev'n	Eta	Adjusted for independents Dev'n Beta	Adjusted for independents + covariates Dev'n Beta
Groups					
Aristotle	19	4.38			3.43
Burke	17	-0.43			0.03
Tagmami	15	-5.06			-4.38
			0.24		0.20
Multiple R squared					.128
Multiple R					.358

Table 3.22

ANALYSIS OF COVARIANCE FOR POSTTEST QUANTITY OF IDEAS
AMONG THREE EXPERIMENTAL GROUPS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	57.709	1	57.709	0.020	0.889
SATV	57.709	1	57.709	0.020	0.889
Main effects	4702.555	2	2351.278	0.805	0.453
Groups	4702.555	2	2351.278	0.805	0.453
Explained	4760.264	3	1586.755	0.544	0.655
Residual	137198.365	47	2919.114		
Total	141958.629	50	2839.173		

Covariate	Raw regression coefficient
SATV	0.015

53 cases were processed.
2 cases (3.8%) were missing.

Table 3.23

MULTIPLE CLASSIFICATION ANALYSIS FOR POSTTEST QUANTITY OF IDEAS
AMONG THREE EXPERIMENTAL GROUPS

Grand mean = 123.45							
Variable - category	N	Unadjusted		Adjusted for		Adjusted for	
		Dev'n	Eta	Dev'n	Beta	independents	+ covariates
						Dev'n	Beta
Groups							
Aristotle	19	2.50				2.37	
Burke	17	9.73				9.79	
Tagmemic	15	-14.18				-14.10	
			0.18				0.18
Multiple R squared							.034
Multiple R							.183

Results of Hypothesis Eight--Qualitative Group Performances

In general, the results of the four qualitative distinctions found significant differences in favor of the three heuristic treatments. In every category, after the deviation on the posttests had been adjusted for the covariables--SAT verbal and ECT scores--the control group was entirely responsible for the negative values. Furthermore, the additional analyses of covariance--with the SAT verbal score as the single covariable--run on the three heuristic treatments themselves found more significant differences on the pretest than on the posttest. In other words, the treatments were making the three experimental groups more alike with respect to their collective insightfulness, comprehensiveness, intellectual ability, and overall qualitative performance. The following pages present these particular findings in detail.

Factuality, Surprise Value, Insightfulness. An analysis of covariance found no significant difference on the pretest for this qualitative category ($F=1.516$, $p=.220$; see Table 3.24). The multiple classification analysis (Table 3.25) showed the Aristotle group ranked first; control, second; Burke, third; and the tagmemic group, fourth. The posttest's analysis of covariance

Table 3.24

ANALYSIS OF COVARIANCE FOR PRETEST FACTUALITY, SURPRISE VALUE,
AND INSIGHTFULNESS OF IDEAS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	11.743	2	5.871	1.812	0.173
SATV	0.960	1	0.960	0.296	0.589
ECT	3.191	1	3.191	0.985	0.325
Main effects	14.740	3	4.913	1.516	0.220
Groups	14.740	3	4.913	1.516	0.220
Explained	26.483	5	5.297	1.635	0.166
Residual	178.206	55	3.240		
Total	204.689	60	3.411		

59 cases were processed
8 cases (11.6%) were missing.

Table 3.25

MULTIPLE CLASSIFICATION ANALYSIS FOR PRETEST FACTUALITY,
SURPRISE VALUE, AND INSIGHTFULNESS OF IDEAS

Grand mean = 4.70							
Variable + category	N	Unadjusted		Adjusted for		Adjusted for	
		Dev'n	Eta	Dev'n	Beta	independents	+ covariates
						Dev'n	Beta
Groups							
Aristotle	13	0.80				0.75	
Burke	15	-0.37				-0.24	
Tagmemic	14	-0.42				-0.28	
Control	14	-0.20				-0.43	
			0.28				0.27
Multiple R squared						.129	
Multiple R						.360	

reported a significant difference among the groups ($F=13.148$, $p=.000$; see Table 3.26) with the control group bearing the full weight of the negative deviation (see Table 3.27). The ranks of the groups became (1) Aristotle, (2) tagmemics, (3) Burke, and (4) control.

Among the three heuristic groups, an analysis of covariance on the pretest scores found no significant difference ($F=1.707$; $p=.192$; see Table 3.28). The multiple classification analysis (Table 3.29) shows that the groups became more alike after the adjusted deviation calculations. As was the case for the quantitative evaluation, an analysis of covariance found that the heuristic treatments made the groups' differences even less significant ($F=.993$, $p=.378$; see Table 3.30). The multiple classification analysis (Table 3.31) indicated that the Burke treatment tended to decrease slightly while the tagmemic treatment increased that group's insightfulness; the Aristotle treatment comparatively remained more "insightful." Still, what must be emphasized is that the CAI-invention treatments made the groups more alike.

Table 3.26

ANALYSIS OF COVARIANCE FOR POSTTEST FACTUALITY, SURPRISE
VALUE, AND INSIGHTFULNESS OF IDEAS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	5.239	2	2.620	0.567	0.570
SATV	0.331	1	0.331	0.072	0.790
ECT	1.594	1	1.594	0.345	0.559
Main effects	182.083	3	60.694	13.148	0.000
Groups	182.083	3	60.694	13.148	0.000
Explained	187.322	5	37.464	8.116	0.000
Residual	253.891	55	4.616		
Total	441.213	60	7.354		

69 cases were processed.
8 cases (11.6%) were missing.

Table 3.27

MULTIPLE CLASSIFICATION ANALYSIS FOR POSTTEST FACTUALITY,
SURPRISE VALUE, AND INSIGHTFULNESS OF IDEAS

Grand mean = 3.48						
Variable + category	N	Unadjusted		Adjusted for independents		Adjusted for independents + covariates
		Dev'n	Eta	Dev'n	Beta	Dev'n
Groups						
Aristotle	18		1.69			1.63
Burke	15		0.26			0.47
Tagmemic	14		0.31			0.54
Control	14		-2.76			-3.13
			0.80			0.66
Multiple R squared						
Multiple R						
						.425
						.652

Table 3.28

ANALYSIS OF COVARIANCE FOR PRETEST FACTUALITY, SURPRISE VALUE,
AND INSIGHTFULNESS AMONG THREE EXPERIMENTAL GROUPS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	19.495	1	19.495	6.171	0.017
SATV	19.495	1	19.495	6.171	0.017
Main effects	10.784	2	5.392	1.707	0.192
Groups	10.784	2	5.392	1.707	0.192
Explained	30.279	3	10.093	3.195	0.032
Residual	148.466	47	3.159		
Total	178.745	50	3.575		
Covariate	Raw regression coefficient				
SATV	0.009				

53 cases were processed.
2 cases (3.8%) were missing.

Table 3.29

MULTIPLE CLASSIFICATION ANALYSIS FOR PRETEST FACTUALITY, SURPRISE
VALUE, AND INSIGHTFULNESS AMONG THREE EXPERIMENTAL GROUPS

Grand mean = 4.84				Adjusted for	
Variable + category	N	Unadjusted Dev'n	Eta	independents	
				Dev'n	Beta
Groups				Adjusted for	
Aristotle	19	0.68		independents	
Burke	17	-0.20		+ covariates	
Tagmemic	15	-0.64		Dev'n	Beta
			0.30		0.25
Multiple R squared					.169
Multiple R					.412

Table 3.30

ANALYSIS OF COVARIANCE FOR POSTTEST FACTUALITY, SURPRISE VALUE,
AND INSIGHTFULNESS AMONG THREE EXPERIMENTAL GROUPS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	18.987	1	18.987	3.500	0.068
SATV	18.987	1	18.987	3.500	0.068
Main effects	10.770	2	5.385	0.993	0.378
Groups	10.770	2	5.385	0.993	0.378
Explained	29.757	3	9.919	1.828	0.155
Residual	254.988	47	5.425		
Total	284.745	50	5.695		
Covariate	Raw regression coefficient				
SATV	0.008				

53 cases were processed.
2 cases (3.8%) were missing.

Table 3.31

MULTIPLE CLASSIFICATION ANALYSIS FOR POSTTEST FACTUALITY, SURPRISE
VALUE, AND INSIGHTFULNESS AMONG THREE EXPERIMENTAL GROUPS

Grand mean = 9.49							
Variable + category	N	Unadjusted		Adjusted for		Adjusted for	
		Dev'n	Eta	Dev'n	Beta	independents + covariates	
Groups							
Aristotle	19	0.72				0.60	
Burke	17	-0.43				-0.38	
Tagmemic	15	-0.42				-0.34	
			0.23				0.20
Multiple R squared							.105
Multiple R							.323

Comprehensiveness. The analysis of covariance on the pretest evaluation for "comprehensiveness" found no statistically significant difference among the four groups ($F=1.681$, $p=.182$; see Table 3.32). The relative "comprehensive" performances (Table 3.33) found the groups ranked (1) Aristotle, (2) control, (3) Burke, and (4) tagmemics. The results of the posttest found a significant difference among the four groups ($F=7.563$, $p=.000$; see Table 3.34). The most comprehensive group was the Aristotle group; also, the control group, after the adjusted deviation, bore the entire negative deviation (see Table 3.35).

One of the most interesting results in this study was discovered when an analysis of covariance found a significant difference on the pretest "comprehensiveness" among the three experimental groups ($F=3.613$, $p=.035$; see Table 3.36). The multiple classification analysis (Table 3.37) illustrated that the tagmemic pretest's adjusted deviation (-1.04) was the major reason for this significant difference. The posttest analysis of covariance found no statistically significant difference among the groups ($F=1.334$, $p=.273$; see Table 3.38). Again, the multiple

Table 3.32

ANALYSIS OF COVARIANCE FOR PRETEST COMPREHENSIVENESS OF IDEAS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	15.288	2	7.644	1.878	0.163
SATV	1.135	1	1.135	0.279	0.600
ECT	4.345	1	4.345	1.068	0.306
Main effects	20.526	3	6.842	1.681	0.182
Groups	20.526	3	6.842	1.681	0.182
Explained	35.814	5	7.163	1.760	0.137
Residual	223.858	55	4.070		
Total	259.672	60	4.328		

69 cases were processed.
8 cases (11.6%) were missing.

Table 3.33

MULTIPLE CLASSIFICATION ANALYSIS FOR PRETEST COMPREHENSIVENESS OF IDEAS

Grand mean = 5.15							
Variable + category	N	Unadjusted		Adjusted for		Adjusted for	
		Dev'n	Eta	independents	Beta	+ covariates	
				Dev'n	Beta	Dev'n	Beta
Groups							
Aristotle	18	0.90				0.76	
Burke	15	-0.21				-0.09	
Tagmemic	14	-1.00				-0.87	
Control	14	0.21				0.00	
			0.32				0.28
Multiple R squared							.138
Multiple R							.371

Table 3.34

ANALYSIS OF COVARIANCE FOR POSTTEST COMPREHENSIVENESS OF IDEAS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	9.944	2	4.972	0.832	0.441
SATV	0.361	1	0.361	0.060	0.807
ECT	7.309	1	7.309	1.223	0.274
Main effects	135.632	3	45.211	7.563	0.000
Groups	135.632	3	45.211	7.563	0.000
Explained	145.576	5	29.115	4.870	0.001
Residual	328.785	55	5.978		
Total	474.361	60	7.906		

69 cases were processed.
8 cases (11.6%) were missing.

Table 3.35

MULTIPLE CLASSIFICATION ANALYSIS FOR POSTTEST COMPREHENSIVENESS OF IDEAS

Grand mean = 8.16							
Variable + category	N	Unadjusted		Adjusted for		Adjusted for	
		Dev'n	Eta	independents	Beta	independents	Beta
						+ covariates	
Groups							
Aristotle	18	1.72				1.68	
Burke	15	0.04				0.23	
Tagmemic	14	-0.09				0.12	
Control	14	-2.16				-2.52	
			0.30				0.54
Multiple R squared							.307
Multiple R							.534

Table 3.36

ANALYSIS OF COVARIANCE FOR PRETEST COMPREHENSIVENESS OF IDEAS
AMONG THREE EXPERIMENTAL GROUPS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	16.551	1	16.551	4.424	0.041
SATV	16.551	1	16.551	4.424	0.041
Main effects	27.035	2	13.517	3.613	0.035
Groups	27.035	2	13.517	3.613	0.035
Explained	43.585	3	14.528	3.884	0.015
Residual	175.827	47	3.741		
Total	219.412	50	4.388		

Covariate Raw regression coefficient

SATV 0.008

53 cases were processed.

2 cases (3.8%) were missing.

Table 3.37

MULTIPLE CLASSIFICATION ANALYSIS FOR PRETEST COMPREHENSIVENESS
OF IDEAS AMONG THREE EXPERIMENTAL GROUPS

Grand mean = 5.18				Adjusted for independents + covariates	
Variable + category	N	Unadjusted Dev'n	Eta	Adjusted for independents Dev'n	Beta
Groups					
Aristotle	19	0.88		0.78	
Burke	17	0.00		0.05	
Tagmemic	15	-1.11		-1.04	
			0.39		0.35
Multiple R squared					.199
Multiple R					.446

Table 3.38

ANALYSIS OF COVARIANCE FOR POSTTEST COMPREHENSIVENESS OF IDEAS
AMONG THREE EXPERIMENTAL GROUPS

Source of variation	Sum of Squares	df	Mean Square	F	Signif of F
Covariates	21.951	1	21.951	3.207	0.080
SATV	21.951	1	21.951	3.207	0.080
Main effects	18.267	2	9.134	1.334	0.273
Groups	18.267	2	9.134	1.334	0.273
Explained	40.219	3	13.406	1.959	0.133
Residual	321.703	47	6.845		
Total	361.922	50	7.238		

Covariate Raw regression coefficient

SATV 0.009

53 cases were processed.
2 cases (3.8%) were missing.

Table 3.39

MULTIPLE CLASSIFICATION ANALYSIS FOR POSTTEST COMPREHENSIVENESS
OF IDEAS AMONG THREE EXPERIMENTAL GROUPS

Grand mean = 3.04						
Variable + category	N	Unadjusted Dev'n	Eta	Adjusted for independents Dev'n	Beta	Adjusted for independents + covariates Dev'n Beta
Groups						
Aristotle	19	0.91				0.79
Burke	17	-0.51				-0.43
Tagmemic	15	-0.57				-0.49
			0.26			0.23
Multiple R squared						.111
Multiple R						.333

classification analysis in Table 3.39 confirmed that the experimental differences were decreasing.

Intellectual Processing. Regarding the evidence of intellectual processing in the pretest performances among the four groups, an analysis of covariance found no significant difference ($F=1.663$, $p=.186$; see Table 3.40). The multiple classification analysis (Table 3.41) illustrated the respective rankings: (1) Aristotle, (2) control, (3) Burke, and (4) tagmemics. The posttest results showed a significant difference among the four groups ($F=13.332$, $p=.000$; see Table 3.42). Interestingly, the multiple classification analysis showed a distinct improvement in the tagmemic treatment and, again, another adjusted deviation which favored all of the experimental groups over the control group (see Table 3.43).

The results of an analysis of covariance among the three experimental groups pretest performance were statistically significant ($F=3.451$, $p=.041$; see Table 3.44); the multiple classification analysis (Table 3.45) illustrated the tagmemic group fared poorly in comparison to the scores of the other two groups. In the posttest, however, an analysis of covariance could

Table 3.40
ANALYSIS OF COVARIANCE FOR PRETEST EVIDENCE OF
INTELLECTUAL PROCESSING

Source of variation	Sum of Squares	df	Mean Square	F	Signif of F
Covariates	25.398	2	12.699	5.293	0.008
SATV	13.588	1	13.588	5.664	0.021
ECT	0.008	1	0.008	0.003	0.954
Main effects	11.966	3	3.989	1.663	0.186
Groups	11.966	3	3.989	1.663	0.186
Explained	37.364	5	7.473	3.115	0.015
Residual	131.948	55	2.399		
Total	169.311	60	2.822		

69 cases were processed.
3 cases (11.6%) were missing.

Table 3.41
MULTIPLE CLASSIFICATION ANALYSIS FOR PRETEST EVIDENCE
OF INTELLECTUAL PROCESSING

Grand mean = 5.25					
Variable + category	N	Unadjusted Dev'n	Eta	Adjusted for independents Dev'n	Beta
Groups					
Aristotle	18	0.59		0.52	
Burke	15	-0.11		0.03	
Tagmemic	14	-0.89		-0.73	
Control	14	0.25		0.03	
			0.33		0.27
Multiple R squared					.221
Multiple R					.470

Table 3.42

ANALYSIS OF COVARIANCE FOR POSTTEST EVIDENCE
OF INTELLECTUAL PROCESSING

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	5.924	2	2.962	0.708	0.497
SATV	0.067	1	0.067	0.016	0.899
ECT	2.643	1	2.643	0.632	0.430
Main effects	167.310	3	55.770	13.332	0.000
Groups	167.310	3	55.770	13.332	0.000
Explained	173.234	5	34.647	8.282	0.000
Residual	230.078	55	4.183		
Total	403.311	60	6.722		

69 cases were processed.
3 cases (11.8%) were missing.

Table 3.43

MULTIPLE CLASSIFICATION ANALYSIS FOR POSTTEST
EVIDENCE OF INTELLECTUAL PROCESSING

Grand mean = 9.75					
Variable + category	N	Unadjusted Dev'n Eta	Adjusted for independents Dev'n Beta	Adjusted for independents + covariates Dev'n Beta	
Groups					
Aristotle	18	1.52		1.46	
Burke	15	-0.09		0.12	
Tagmemic	14	0.75		0.98	
Control	14	-2.61		-2.99	
		0.60			0.66
Multiple R squared					.430
Multiple R					.655

Table 3.44

ANALYSIS OF COVARIANCE FOR PRETEST EVIDENCE OF INTELLECTUAL
PROCESSING AMONG THREE EXPERIMENTAL GROUPS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	26.900	1	26.900	10.742	0.002
SATV	26.900	1	26.900	10.742	0.002
Main effects	17.085	2	8.543	3.411	0.041
Groups	17.085	2	8.543	3.411	0.041
Explained	43.985	3	14.662	5.855	0.002
Residual	117.701	47	2.504		
Total	161.686	50	3.234		

Covariate Raw regression coefficient

SATV 0.010

53 cases were processed.
2 cases (3.8%) were missing.

Table 3.45

MULTIPLE CLASSIFICATION ANALYSIS FOR PRETEST EVIDENCE OF
INTELLECTUAL PROCESSING AMONG THREE EXPERIMENTAL GROUPS

Grand mean = 5.25				Adjusted for independents + covariates	
Variable + category	N	Unadjusted Dev'n	Eta	Adjusted for independents Dev'n	Beta
Groups					
Aristotle	19	0.64			0.30
Burke	17	0.16			0.23
Tagmemic	15	-0.99			-0.89
			0.38		0.33
Multiple R squared					.272
Multiple R					.322

find no statistically significant difference among the groups ($F=.941$, $p=.397$; see Table 3.46). The Burke group declined though and the tagmemic group improved, so much so that their respective pretest positions were reversed (see Table 3.47). This particular finding will be explored in greater detail in the following chapter.

Holistic Evaluation of Quality. The general patterns already established were verified in the statistical analyses for "overall quality" of these lists of ideas: a significant posttest difference among the four groups and a gravitational tendency among the three experimental groups to reconcile statistical differences on the dependent posttest variable.

Specifically, an analysis of covariance showed no difference among the four groups on the overall quality of their pretest ($F=1.241$, $p=.304$; see Table 3.48). The multiple classification analysis (Table 3.49) revealed no surprises: the rankings being Aristotle, control, Burke, and tagmemics. The results of the posttest showed a significant difference among the four groups ($F=10.658$, $p=.000$; see Table 3.50). Like the other qualitative multiple classification analyses, this multiple classification analysis (Table

Table 3.46

ANALYSIS OF COVARIANCE FOR POSTTEST EVIDENCE OF INTELLECTUAL
PROCESSING AMONG THREE EXPERIMENTAL GROUPS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	22.132	1	22.132	4.122	0.048
SATV	22.132	1	22.132	4.122	0.048
Main effects	10.107	2	5.053	0.941	0.397
Groups	10.107	2	5.053	0.941	0.397
Explained	32.239	3	10.746	2.001	0.127
Residual	252.388	47	5.370		
Total	284.627	50	5.693		

Covariate Raw regression coefficient

SATV 0.009

53 cases were processed.
2 cases (3.8%) were missing.

Table 3.47

MULTIPLE CLASSIFICATION ANALYSIS FOR POSTTEST EVIDENCE OF
INTELLECTUAL PROCESSING AMONG THREE EXPERIMENTAL GROUPS

Grand mean = 9.78							
Variable + category	N	Unadjusted		Adjusted for		Adjusted for	
		Dev'n	Eta	Dev'n	Beta	independents	+ covariates
Groups							
Aristotle	19	0.58				0.45	
Burke	17	-0.87				-0.60	
Tagmemic	15	0.02				0.11	
			0.22				0.19
Multiple R squared						.113	
Multiple R						.337	

Table 3.48
ANALYSIS OF COVARIANCE FOR PRETEST OVERALL QUALITY OF IDEAS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	15.060	2	7.530	2.414	0.099
SATV	4.017	1	4.017	1.288	0.261
ECT	1.277	1	1.277	0.409	0.525
Main effects	11.616	3	3.872	1.241	0.304
Groups	11.616	3	3.872	1.241	0.304
Explained	26.676	5	5.335	1.710	0.148
Residual	171.553	55	3.119		
Total	198.230	60	3.304		

69 cases were processed.
8 cases (11.6%) were missing.

Table 3.49
MULTIPLE CLASSIFICATION ANALYSIS FOR PRETEST OVERALL
QUALITY OF IDEAS

Grand mean = 4.79							
Variable + category	N	Unadjusted		Adjusted for		Adjusted for	
		Dev'n	Eta	Dev'n	Beta	independents + covariates	
						Dev'n	Beta
Groups							
Aristotle	18	0.71				0.66	
Burke	15	-0.39				-0.26	
Tagmemic	14	-0.57				-0.43	
Control	14	0.07				-0.14	
			0.28				0.24
Multiple R squared							.135
Multiple R							.367

3.51) saw the total burden of the adjusted negative deviation fall into the control group's domain.

Among the three experimental groups, the analysis of covariance on the pretest measure for overall quality reported no significant difference ($F=2.110$, $p=.133$; see Table 3.52), and the multiple classification analysis (Table 3.53) echoed the previous pretest rankings: Aristotle, Burke, and tagmemics. The analysis of covariance on the posttest revealed even less significant differences among the three groups ($F=1.426$, $p=.251$; see Table 3.54). Also, the multiple classification analysis (Table 3.55) again revealed the tendency for the Burke group to decline and the tagmemic group to improve while the Aristotle group remained steadily at the top.

Results of Hypothesis Nine--Composition Plan Quality

None of the statistical tests comparing the quality of the composition plans among the four groups was statistically significant. The general pattern revealed that the Aristotle group ranked first, the control group ranked second; the tagmemic group ranked third, and the Burke group ranked fourth, though some interesting rank switching occasionally occurred.

Table 3.50
ANALYSIS OF COVARIANCE FOR POSTTEST OVERALL QUALITY OF IDEAS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	8.746	2	4.373	0.851	0.433
SATV	0.163	1	0.163	0.032	0.859
ECT	3.642	1	3.642	0.708	0.404
Main effects	164.352	3	54.784	10.658	0.000
Groups	164.352	3	54.784	10.658	0.000
Explained	173.098	5	34.620	6.735	0.000
Residual	282.705	55	5.140		
Total	455.803	60	7.597		

69 cases were processed.
8 cases (11.6%) were missing.

Table 3.51
MULTIPLE CLASSIFICATION ANALYSIS FOR POSTTEST
OVERALL QUALITY OF IDEAS

Grand mean = 3.26						
Variable + category	N	Unadjusted		Adjusted for		Adjusted for
		Dev'n	Eta	Dev'n	Beta	independents + covariates
						Dev'n Beta
Groups						
Aristotle	18	1.74				1.68
Burke	15	-0.20				0.02
Tagmemic	14	0.45				0.69
Control	14	-2.48				-2.87
			0.56			0.61
Multiple R squared						.380
Multiple R						.616

Table 3.52

ANALYSIS OF COVARIANCE FOR PRETEST OVERALL QUALITY OF IDEAS
AMONG THREE EXPERIMENTAL GROUPS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	22.497	1	22.497	8.335	0.006
SATV	22.497	1	22.497	8.335	0.006
Main effects	11.390	2	5.695	2.110	0.133
Groups	11.390	2	5.695	2.110	0.133
Explained	33.887	3	11.296	4.185	0.010
Residual	126.858	47	2.699		
Total	160.745	50	3.215		

Covariate Raw regression coefficient

SATV 0.009

53 cases were processed.
2 cases (3.8%) were missing.

Table 3.53

MULTIPLE CLASSIFICATION ANALYSIS FOR PRETEST OVERALL QUALITY
OF IDEAS AMONG THREE EXPERIMENTAL GROUPS

Grand mean = 4.84					
Variable + category	N	Unadjusted Dev'n	Eta	Adjusted for independents Dev'n	Adjusted for independents + covariates Beta
Groups					
Aristotle	19	0.68			0.56
Burke	17	-0.14			-0.08
Tagmemic	15	-0.71			-0.62
			0.32		0.27
Multiple R squared					.311
Multiple R					.459

Table 3.54

ANALYSIS OF COVARIANCE FOR POSTTEST OVERALL QUALITY OF IDEAS
AMONG THREE EXPERIMENTAL GROUPS

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	21.591	1	21.591	3.281	0.076
SATV	21.591	1	21.591	3.281	0.076
Main effects	18.764	2	9.382	1.426	0.251
Groups	18.764	2	9.382	1.426	0.251
Explained	40.356	3	13.452	2.044	0.121
Residual	309.330	47	6.581		
Total	349.686	50	6.994		

Covariate Raw regression coefficient

SATV 0.009

53 cases were processed.
2 cases (3.8%) were missing.

Table 3.55

MULTIPLE CLASSIFICATION ANALYSIS FOR POSTTEST OVERALL QUALITY
OF IDEAS AMONG THREE EXPERIMENTAL GROUPS

Grand mean = 9.25						Adjusted for independents + covariates	
Variable + category	N	Unadjusted Dev'n	Eta	Adjusted for independents Dev'n	Beta	Adjusted for independents + covariates Dev'n	Beta
Groups							
Aristotle	19	0.85				0.73	
Burke	17	-0.78				-0.73	
Tagmemic	15	-0.19				-0.10	
			0.27				0.23
Multiple R squared							.115
Multiple R							.340

Consequently, the gains experienced by the three heuristic groups in quantity and quality of "raw material" did not significantly carry over to the "arrangement" phase of the prewriting process.

Insightfulness. Table 3.56 shows that there was no significant difference among the four groups' composition plans, the criteria being the plans' "insightfulness" ($F=.846$, $p=.474$). The multiple classification analysis, however, illustrated that there was a tendency for the plans of the Aristotle and the tagmemic group to be more "factual" and "insightful" (see Table 3.57). Also, there was almost no difference between the adjusted deviations between the Burke group and the control group.

Comprehensiveness. The results of an analysis of covariance on the "comprehensiveness of the composition plan" found no statistically significant difference among the groups ($F=1.800$, $p=.156$; see Table 3.58). Table 3.59 shows the respective rankings obtained from the multiple classification analysis; interestingly, the performance of the control group was judged higher than both the Burke and the tagmemic groups--heuristics known for their comprehensiveness.

Table 3.56

ANALYSIS OF COVARIANCE FOR INSIGHTFULNESS OF COMPOSITION PLAN

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	5.409	1	5.409	0.918	0.342
SATV	5.409	1	5.409	0.918	0.342
Main effects	14.958	3	4.986	0.846	0.474
Groups	14.958	3	4.986	0.846	0.474
Explained	20.367	4	5.092	0.864	0.491
Residual	365.304	62	5.892		
Total	385.672	66	5.844		

Covariate Raw regression coefficient

SATV 0.004

69 cases were processed.

2 cases (2.9%) were missing.

Table 3.57

MULTIPLE CLASSIFICATION ANALYSIS FOR INSIGHTFULNESS OF COMPOSITION PLAN

Grand mean = 6.37							
Variable + category	N	Unadjusted		Adjusted for		Adjusted for	
		Dev'n	Eta	independents	Beta	independents + covariates	
				Dev'n	Beta	Dev'n	Beta
Groups							
Aristotle	19	0.37				0.54	
Burke	17	-0.55				-0.50	
Tagmemic	15	0.29				0.36	
Control	16	-0.37				-0.45	
			0.20				0.20
Multiple R squared							.053
Multiple R							.230

Perhaps "invention" comprehensiveness differs more than many of us believe from "arrangement" comprehensiveness, but more of this in the next chapter.

Maturity. As reported on Table 3.60, there was no significant difference among the four groups with respect to the maturity of their composition plans ($F=.822$, $p=.487$). Table 3.61 reports the results of the multiple classification analysis in which the unadjusted deviation shows that the Aristotle group was entirely responsible for the positive deviation. As previously mentioned, however, the judges' lowest interrater reliability occurred in this category.

Suitable Arrangement. The results of an analysis of covariance here were probably the most surprising, though there was no statistically significant difference among the groups ($F=2.354$, $p=.081$; see Table 3.62). The control group, as reported in the multiple classification analysis on Table 3.63, ranked first, well above, but not statistically far enough above, the experimental groups. This finding anticipates one of the dangers of stimulating invention in the freshman setting--"rhetorical overload." This was the single category in which the control group's rank bettered the performances of the experimental groups.

Table 3.38

ANALYSIS OF COVARIANCE FOR COMPREHENSIVENESS OF COMPOSITION PLAN

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	9.354	1	9.354	1.462	0.231
SATV	9.354	1	9.354	1.462	0.231
Main effects	34.554	3	11.518	1.800	0.156
Groups	34.554	3	11.518	1.800	0.156
Explained	43.908	4	10.977	1.716	0.158
Residual	396.659	62	6.398		
Total	440.567	66	6.675		

Covariate Raw regression coefficient

SATV 0.005

69 cases were processed.
2 cases (2.9%) were missing.

Table 3.39

MULTIPLE CLASSIFICATION ANALYSIS FOR COMPREHENSIVENESS OF COMPOSITION PLAN

Grand mean = 6.55						Adjusted for independents	
Variable + category	N	Unadjusted		Adjusted for independents		+ covariates	
		Dev'n	Eta	Dev'n	Beta	Dev'n	Beta
Groups							
Aristotle	19	1.03				1.00	
Burke	17	-0.96				-0.91	
Tagmemic	15	-0.42				-0.36	
Control	16	0.20				0.12	
		0.30				0.23	
Multiple R squared						.100	
Multiple R						.318	

Table 3.60
ANALYSIS OF COVARIANCE FOR MATURITY OF COMPOSITION PLAN

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	9.146	1	9.146	1.704	0.197
SATV	9.146	1	9.146	1.704	0.197
Main effects	13.232	3	4.411	0.822	0.487
Groups	13.232	3	4.411	0.822	0.487
Explained	22.378	4	5.594	1.042	0.393
Residual	332.786	62	5.368		
Total	355.164	66	5.381		

Covariate Raw regression coefficient

SATV 0.005

69 cases were processed.

2 cases (2.9%) were missing.

Table 3.61
MULTIPLE CLASSIFICATION ANALYSIS FOR MATURITY OF COMPOSITION PLAN

Grand mean = 6.27						
Variable - category	N	Unadjusted		Adjusted for		Adjusted for
		Dev'n	Eta	Dev'n	Beta	independents + covariates
Groups						Dev'n Beta
Aristotle	19	0.68				0.64
Burke	17	-0.30				-0.44
Tagmemic	15	-0.00				0.08
Control	16	-0.27				-0.36
			0.20			0.19
Multiple R squared						.063
Multiple R						.251

Table 3.62
ANALYSIS OF COVARIANCE FOR SUITABLE ARRANGEMENT
OF COMPOSITION PLAN

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	7.701	1	7.701	1.138	0.290
SATV	7.701	1	7.701	1.138	0.290
Main effects	47.797	3	15.932	2.354	0.081
Groups	47.797	3	15.932	2.354	0.081
Explained	55.498	4	13.875	2.050	0.098
Residual	419.696	62	6.769		
Total	475.194	66	7.200		

Covariate Raw regression coefficient

SATV 0.004

69 cases were processed.
2 cases (2.9%) were missing.

Table 3.63
MULTIPLE CLASSIFICATION ANALYSIS FOR SUITABLE ARRANGEMENT
OF COMPOSITION PLAN

Grand mean = 6.16							
Variable + category	N	Unadjusted		Adjusted for		Adjusted for	
		Dev'n	Eta	Dev'n	Beta	independents	+ covariates
						Dev'n	Beta
Groups							
Aristotle	19	0.41				0.39	
Burke	17	-1.16				-1.13	
Tagmemic	15	-0.50				-0.46	
Control	16	1.21				1.16	
			0.34				0.32
Multiple R squared						.117	
Multiple R						.342	

Helpfulness. Table 3.64 reports the results of the analysis of covariance for "helpfulness" in which, again, there were no significant differences among the four groups ($F=1.962$, $p=.129$). The multiple classification analysis (Table 3.65) reported the following rankings: (1) Aristotle, (2) control, (3) tagmemics, and (4) Burke.

Overall Impression. There was not a statistically significant difference among the groups with respect to the judges' overall qualitative impressions of the composition plans ($F=1.215$, $p=.312$; see Table 3.66). Table 3.67 reported that the composition plans written by the Aristotle group were slightly better than the control group's, but the composition plans written by the control group were slightly better than those written by the tagmemic group and the Burke group--though no differences which could not have been accounted for by chance about thirty percent of the time.

Table 3.64
ANALYSIS OF COVARIANCE FOR HELPFULNESS OF COMPOSITION PLAN

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	0.596	1	0.596	0.106	0.746
SATV	0.596	1	0.596	0.106	0.746
Main effects	33.234	3	11.078	1.962	0.129
Groups	33.234	3	11.078	1.962	0.129
Explained	33.830	4	8.458	1.498	0.214
Residual	350.080	62	5.646		
Total	383.910	66	5.817		

Covariate Raw regression coefficient

SATV 0.001

69 cases were processed.
2 cases (2.9%) were missing.

Table 3.65
MULTIPLE CLASSIFICATION ANALYSIS FOR HELPFULNESS
OF COMPOSITION PLAN

Grand mean = 6.39							
Variable + category	N	Unadjusted		Adjusted for		Adjusted for	
		Dev'n	Eta	Dev'n	Beta	independents + covariates	
Groups							
Aristotle	19	0.93				0.93	
Burke	17	-0.92				-0.92	
Tagmemic	15	-0.39				-0.39	
Control	16	0.24				0.24	
			0.30				0.30
Multiple R squared							.088
Multiple R							.297

Table 3.66
ANALYSIS OF COVARIANCE FOR OVERALL IMPRESSION
OF COMPOSITION PLAN

Source of variation	Sum of Squares	df	Mean Square	F	Signif. of F
Covariates	4.312	1	4.312	0.741	0.393
SATV	4.312	1	4.312	0.741	0.393
Main effects	21.218	3	7.073	1.215	0.312
Groups	21.218	3	7.073	1.215	0.312
Explained	25.530	4	6.383	1.097	0.366
Residual	360.888	62	5.821		
Total	386.418	66	5.855		

Covariate Raw regression coefficient

SATV 0.003

69 cases were processed.

2 cases (2.9%) were missing.

Table 3.67
MULTIPLE CLASSIFICATION ANALYSIS FOR OVERALL IMPRESSION
OF COMPOSITION PLAN

Grand mean = 6.31						Adjusted for	
Variable + category	N	Unadjusted		Adjusted for		independents	
		Dev'n	Eta	Dev'n	Beta	+ covariates	
						Dev'n	Beta
Groups							
Aristotle	19	0.74				0.72	
Burke	17	-0.34				-0.81	
Tagmemic	15	-0.18				-0.14	
Control	16	0.19				0.14	
				0.25			0.24
Multiple R squared							
Multiple R						.066	
						.257	

Results of Hypothesis Ten--Significant Correlations The Pearson product-moment correlation coefficient test was run to determine whether there were significant relationships between dependent measures. For the most part, positive correlations were found crossing the SAT verbal score, the previous semester's English grade, and the student's high school rank with the quantitative results, the insightfulness findings, and the overall quality results. These positive correlations were not statistically significant; Appendix G presents the data chart. The ECT score, however, accounted for some interesting negative correlations, one of which was statistically significant. More specifically, the ECT score was negatively correlated with the pretest and posttest scores on "insightfulness," the posttest score on the overall quality of the ideas, and significantly ($S=.022$) negatively correlated with the quantitative posttest.

Summary of Results by Hypothesis

H1: The students who inquired into their research paper topics at the computer terminal reported that the experience was fruitful. A majority reported that generally more students need help prewriting. There was also strong agreement that these CAI units made them think and that heuristic strategies can be applied to a number of topics. The participants--both students and teachers--felt that CAI invention supplemented and often stimulated the prewriting process.

H2: The CAI modules worked, and the students worked at them. Only one student out of fifty-three did not complete the thirty-minute posttest. These findings were much higher than predicted. The lack of "content" information did not stop the students from continuing an exploration of their various topics. That the CAI units handled so many topics without boring the students will be a definite pedagogical advantage.

H3: The CAI modules were quite good at eliciting an answer to the first presentation of any question regardless of the heuristic method. A significant difference was found concerning how well the students elaborated on their first response: the Burke method being the least likely to sustain the inquiry.

The possible heuristic implications will be discussed in the following chapter.

H4: Individual quantitative gains were made in all experimental groups; the individuals in the control group experienced an overall decrease in the number of ideas. The CAI modules effectively encourage quantity. The trend analysis favors the Burke pentad for sheer quantity of information. The student readily identified the act, scene, agent, agency, and purpose of their subjects. These modules certainly stimulated the efficiency of the gathering process, much more so than students in the control group could stimulate their own invention processes.

H5: Individual qualitative gains were made in all experimental groups, although the control group only reached statistical significance in the "insightfulness" measure. Allowing more time for invention does not improve all aspects of the quality of the ideas. The CAI modules are particularly effective for encouraging students to be more comprehensive in their

H6: All of the students internalized the heuristic well-enough to be able to write a list of that strategy's questions. No statistical difference was found among the experimental groups. In the next chapter, this finding will be elaborated on. Basically, the test for internalization is limited for it could not tell whether the student was now using the heuristic or merely remembering and applying the heuristic for this particular assignment.

H7: As far as quantitative differences among the four groups were concerned, they all favored the experimental groups. No statistically significant differences were noted among the three experimental groups; in fact, the CAI treatment actually made these groups more alike.

H8: The qualitative differences also favored the experimental groups in the areas of (1) factuality, surprise value, insightfulness, (2) comprehensiveness, (3) evidence of intellectual processing, and (4) overall impression. Among the experimental groups, they became more alike. Instead of differences, we found a heuristic convergence at work.

H9: None of the statistical procedures comparing the quality of the composition plans among the four groups was statistically significant. There was little carry-over to the "arrangement" phase in terms of the qualitative gains accumulated by the experimental groups in the treatment.

H10: No significant correlations were discovered, except for an intriguing negative correlation between ECT and posttest quantity of ideas.

CHAPTER 4

Conclusions, Recommendations, and Implications

Writers commonly have rituals for beginning which stimulate thinking, order memory, and encourage production. The more systematic these rites of invention are, the more efficient the inquiry will be in terms of the quantity and quality of ideas. At least, that assumption was crucial for this study, and, to a large extent, that assumption has remained valid. In order to simulate such a uniform, systematic inquiry, an invention instructional system was conceived, designed, and developed to be compatible with "state-of-the-art" computer-assisted instruction. Stimulating invention through computer-assisted instruction, however, introduced a number of new "felt difficulties"--some

rhetorical, some methodological, and some pedagogical. This chapter contains more by way of beginnings than conclusions, but such a position can be philosophically advantageous, for, as Edward W. Said writes in Beginnings: Intention and Method (1978), "A beginning, therefore, is a problem to be studied, as well as a position taken by any writer" (p. 13). In other words, there are still problems to find and problems to solve. Said's dichotomy for "beginnings"--problems to study and positions taken by writers--frames the major themes in this chapter: rhetorical problems in stimulating invention and rhetorical styles of writers in the invention stage; methodological problems evaluating heuristic strategies in operation and descriptive reactions to the method; and pedagogical problems in teaching invention by CAI and the consequent reactions students and teachers have toward CAI-prompted invention.

Before elaborating about these rhetorical, methodological, and pedagogical conclusions or recommending implications for further research, perhaps it would be wise to summarize the study thus far.

The impulse for this research was to combine the renewed interest in teaching the first rhetorical art, inventio--the systematic process of exploring a subject in order to discover new insights and persuasive arguments, or recover ideas, facts, and opinions from memory--with the developing technology of instructional computing.

The primary developmental findings were that CAI which encouraged both growth in the number and the sophistication of ideas could be programmed, that questioning dialogues could help students articulate, refine, and preserve their ideas and moreover, that such questioning dialogues could ignore content in favor of perspective and still help students begin writing; and finally, that theories of creativity based on intersecting content and perspective were programmable today and were certain to be even more programmable in the future.

More specifically, the continuing development of generative CAI--systems which can interact responsively and responsibly in what Lorraine T. Sinnott (1976) calls "less predictable modes of CAI, like problem solving or computer simulations" (p. 1)--is inevitable. Although these invention programs incorporated a limited semantic understanding, they followed a current developmental

trend for programs to emulate the verbal behavior of intelligent, personal, inquisitive human tutors. The success and perhaps innovation of these programs is that they represent the first attempt to have an "open" instructional system--i.e., a computer-based package which does not have an associated body of content from which to draw appropriate answers. In this regard, the programs differ from Goldberg's (1973) logic teaching, Wittig's (1977) DIALOGUE modules, the Brown and Burton (1975) SOPHIE tutoring in electronic troubleshooting, and the Collins and Warnock (1974) GEO-SCHOLAR inquiries about South American geography.

The first of two important research findings was that such a systematic inquiry using either Aristotle's twenty-eight enthymeme topoi, Kenneth Burke's dramatistic pentad, or the tagmemic matrix of Richard Young, Alton Becker, and Kenneth Pike made three experimental groups more alike with respect to the quantity and quality of their ideas. Additionally, these three experimental groups differed significantly from a control group with respect to the number of ideas generated, the insightfulness and factuality of the ideas, the comprehensiveness of those ideas, the surface-cued intellectual processing evident in the

sample writings, as well as the overall quality of the inquiry.

The second important finding was that computer-administered, posttest methodology represented a more stringent way for controlling and perhaps later replicating quasi-experimental research in rhetoric. The most beneficial consequence of this study may be the introduction of the computer as a way to increase the reliability and the validity of what researchers in the humanities and researchers in humanities education actually research. Admittedly, the fear and trembling Ellen Nold reported in 1975 still exists, but, if empirical research in rhetoric and English education is to gain any credibility, then the profession must have confidence in the researcher's methodology.

Rhetorical Recommendations and Implications

First among the rhetorical recommendations, of course, is to continue empirical investigations regarding heuristic strategies. And not only those popular comprehensive systems which were compared in this research: the profession needs much more evidence that indeed teaching invention eventually helps writers write.

The next major dilemma in invention research is this one: how does a researcher empirically compare heuristic strategies when those strategies inherently tend to make all groups more alike? Only once in this research was there a significant difference among the three experimental groups--that difference concerning the elaboration rates or ease with which the members of the group continued answering a question. Here, the topoi method was the most likely to sustain an inquiry and the Burke method was the least likely to sustain the inquiry. What confounds this finding, however, is that the Burke pentad stimulated more "propositions" on an average.

The point, though, is this: as any heuristically guided inquiry proceeds from its original premises, the inquiry expands to comprehend more and more reality, more and more perspectives. This heuristic expansion resembles the proverbial pebble-in-the-pond. In terms of the three heuristic methods in this research, a Burke "act" quickly overlaps the dynamic, wave point of view, which in turn overlaps considerations of time--the fifth enthymeme topic. The ninth topic--logical division--assumes the field perspective and a classification mode, perhaps a classification by some criterion, e.g., "agencies."

Aristotle's incentives and deterrents are swift avenues for sorting out "static" features of purpose. If a creative, comprehensive inquiry happens, then heuristic-combining naturally occurs. With this osmotic tendency for one heuristic to converge and assimilate another heuristic perspective noted, some comments about the respective group performances can be cautiously introduced.

That the Aristotle treatment fared well throughout the study may be partially due to the nature of the research paper assignment. The research paper assignment given to the Burke class was this: "Your thesis will be that the persuasive techniques used in the coverage of your topic, both pro and con, are either ethical or unethical; the support for the assertion will come from your research on the aspect of a specific controversial issue." The persuasive aim was emphasized in the particular course from which the subjects were selected. Nevertheless, the insights, comprehensiveness, and intellectual processing evident in the Aristotle group's papers must be based upon more than the nature of the assignment.

The enthymeme as a basis for inquiry is amazingly strong for discovering the inherent dissonance in a subject. Composing the question pool for the topoi module was relatively easy because Aristotle had provided twenty-eight plus explicit predicates, predicates which immediately interact with a body of content.

Although the Aristotle heuristic often is criticized for not being portable--who can name all twenty-eight of the formal topics?--many cues or keywords were easily remembered by the students and easily recognized by the evaluators. The results of the internalization exercise were consequently revealing. Specifically, the students remembered many of the keywords: opposites, consequences, causes, effects, definitions, contradictions, connotations, special experiences, paradoxes, better ways, parts, wholes. . . . Also, the evaluators were able to recognize these enthymeme-based questions with less difficulty.

Having over twenty-eight predicates may also be a reason why the Aristotle treatment prompted the highest elaboration rate. Since the CAI presentation continually asked students to give more information, perhaps it was easier to extend their answers to the topics than it was to extend their answers to Burke's five essential perspectives or to the three categories of particle, wave, and field.

Implications derived from the empirical data of the Burke group's performance are two-edged. The trend showed excellent quantity increases though significantly less elaboration and respectively lower qualitative interaction. Why?

The godterm in Kenneth Burke's dramatistic scheme is "identification." Therefore, the first task of an inquirer using the Burke pentad is to identify the act, scene, agent, agency, and purpose. Any complete exploration, or as Burke writes, "any complete statement about motives will offer some kind of answers to these five questions. . . ." Dramatistically, a writer invents by identifying and later by exploring the ratios among the perspectives. The potential for interaction, in this research at least, was limited with this heuristic. Its quantitative gains may have been achieved because it is not as difficult to describe a scene, an action, a

person, a tool, or a reason as it is to describe the interactions among these variables. Also, "identification" answers tended to be longer first responses and, thirty-one percent of the time, did not stimulate further elaboration. Yet such a finding may be more the direct result of the CAI modules than a result of the heuristic itself. Not that the ratios are ignored, they are not; but the ratio questions are asked in the module only after the first five questions have been answered. Overall the post hoc analysis revealed more identification questions than legitimate "ratio" questions. Improving the Burke program means sacrificing "identification" and emphasizing the ratios and the dialectic. Such a change, however, would be likely to produce a decrease in the number of propositions a student writes. In sum, the vital interaction was delayed, and the overall quality of the Burke performances suffered. At least, the insights and the intellectual processing may have suffered as a result of the delayed presentation of the ratio questions.

What the internalization performance of the Burke heuristic illustrated was interesting and, again, revealing. The "5-W" cues helped the students write a few questions, but after those were asked, some students contaminated their questions and, therefore, puzzled the evaluators as to which of the three heuristics they were using in the exercise. These implications obviously need further testing. Nevertheless, this research strongly indicates that the sophistication of the Burke system is in the manipulation of the ratios and in the subsequent dialectic.

Frankly, the performances of the tagmemic experimental group were the most varied. The correlation statistics on individual quantitative gains between the pretest and the posttest were negative: $-.401$. Also, the correlation statistics on individual qualitative gains between the pretest and the posttest measures within this experimental group were negative: $-.454$ on factuality, $-.404$ on insightfulness; $-.404$ on comprehensiveness; $-.404$ on evidence of intellectual progression; $-.404$ on overall quality. Simply stated, the experimental group showed an unanticipated amount of regression between the pretest and the posttest measures. The data for the control group. The data for the control group.

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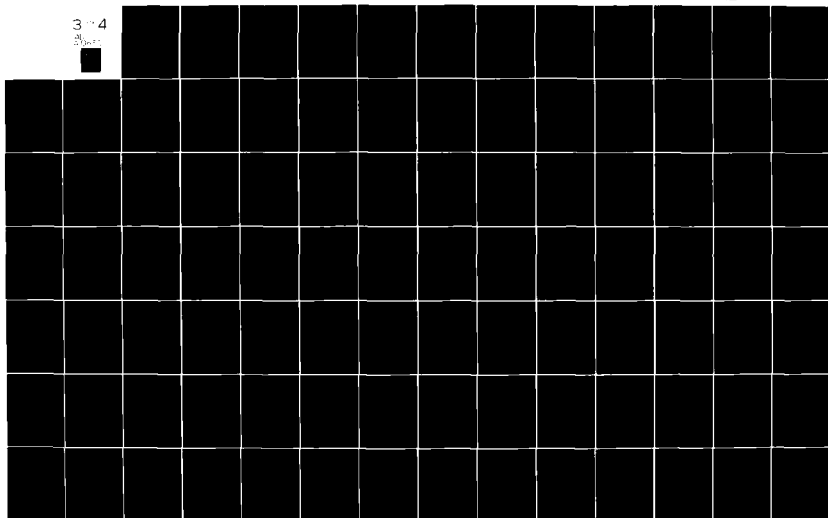
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determine where in the sample this rank switching occurred.

The tagmemic group performance, like the other two heuristic treatments, far outdistanced the control group. The trends, as revealed in the multiple classification analyses, were that the tagmemic group generally improved in insightfulness, intellectual processing, and in overall quality among the three treatment groups; in comprehensiveness, they remained in their same relative positions. Young's and Odell's insistence regarding the intellectual processing in the tagmemic approach is well-founded according to the findings in this study. On the pretest for intellectual processing, the tagmemic performance, after the adjusted covariate deviation, showed this group was completely responsible for the negative deviation. Their improvement on the posttest was as large a "growth" by any one group in the entire study. Although they did not quite overtake the performance of the Aristotle group, they came close. What this performance verifies is how quickly the tagmemic heuristic encourages creative, intellectual interaction.

The practical internalization of the tagmemic heuristic may be more difficult than is commonly supposed, although this implication needs more research and analysis. Like the Burke heuristic, the particle-wave-field approach (admittedly not the complete heuristic) offers only a few "starting places." Consequently, the students had some difficulty creating their own questions from the perspectives of particle, wave, and field. After students asked what a subject is, how it changes, and how it fits into a larger system, some of them tended to leave these perspectives in favor of other questions, questions not as easily recognized as "tagmemically inspired." Because the language and method of tagmemic thinking seemed the most unfamiliar, the students may have needed more of an introduction. But the counterargument is simply that all the lectures and practice sessions were controlled among the groups to see how performances would differ.

During the past decade, a substantial amount of interest has focused on the process of invention. All of the research calls for more research, and this study will not be an exception. The basic rhetorical strategy in invention involves gathering ideas and arguments, memories and beliefs, facts and, even, distortions of

truth. A heuristic method's effectiveness, therefore, can be measured by determining how well it gathers. The next step, arrangement, involves another verbal calculus--a new set of procedures which offer a writer strategies for sorting and selecting the most appropriate ideas and arguments, memories and. . . . This study hoped to uncover which heuristic strategy best foreshadowed arrangement; it found no overwhelming evidence favoring one treatment over another. The composition plan exercise in this research failed to demonstrate any significant transition from the gathering of ideas to the arranging of those ideas. While the dilemma here may be partly pedagogical, the rhetorical dilemma remains: what invention strategies most help a writer gather ideas and foreshadow arrangement? What criteria determine the organizational effectiveness of a heuristic strategy?

Each of the three heuristics explored in this research has its own characteristic problems and areas of greatest effectiveness. As this study illustrated, a given subject can be explored in language appropriate to all three of these approaches. Recognizing the dangers of overgeneralizing from "trends" in this research, this initial comparative study nevertheless opens the door to further investigation. As Richard Young (1978) writes:

There is no algorithm, no systematic decision-making procedure, that can dictate the choice of one theory rather than another. Informed choice will depend upon informed debate, and this requires that we be clear about our criteria for judgment, that we agree on the meaning of our terms, that we have evidence to support claims about the adequacy of one or another of the theories--the process is familiar to us all. If we are to carry it out responsibly, much research needs to be done. (p. 47)

Methodological Recommendations and Implications

The justification of such research as this depends on the relevancy of the problem, the reasonableness of the hypotheses, and the purity of the methodology. The computer was able to contain a number of contaminants, but as the study progressed, some of the limitations became visible.

First, since something must happen in a control group, does not the use of a control group increase the probability of error? Precisely accounting for teacher variability and course variability under the current research practices for the protection and privacy of human subjects is difficult, for how can a "true" control baseline be achieved. Ironically, the control group was the most difficult to account for since there was no method of accurately knowing or describing what heuristic procedures they were using. A descriptive

study defining heuristic strategies of freshman composition students is sorely needed.

Analysis of covariance, while perhaps the best statistical measure available for analyzing differences among non-random groups, must be carefully scrutinized for the reliability of the dependent variables. What should be the covariable in further studies of invention? One appropriate design for a follow-up experiment would be to have the sample subjects take one or two cognitive ability tests, perhaps tests selected from the Kit of Reference Tests for Cognitive Factors (French, Ekstrom, and Price, 1963), and, using their cognitive scores as a covariable, describe the results.

Two other limitations should be mentioned. The study did not account for the typing skills within the experimental groups or for the writing speed of the control group. If anything, the lack of typing ability would have favored the control group's relative position. Also, the test for internalization is actually a test of the "mid"-term memory and a representation of a skill elicited by command; it is not a test of what heuristic strategy the student would now actually use to write. The control group was not asked to generate ten questions since they were not taught a specific heuristic. Still, it might have been a most

interesting challenge for the evaluators to sort out the exercises as well as an important collection of "natural" heuristic methods.

This much honesty betrays the rhetorician, though not the Platonic rhetorician. I am concerned with this matter of methodological soul. Remember Plato's contempt for some of his contemporaries in the Phaedrus: "Our contemporaries--you've heard of them--who write handbooks on rhetoric are crafty fellows that keep to themselves this matter of soul, though they know it perfectly well" (p. 63).

The strengths of the methodology concern the handling of the experimental groups, the data-gathering facilities for the posttest, the masked evaluation of the data, and the intensive statistical analysis. All of these strengths are vital to a disciplined empirical inquiry. What may be even more critical is that the practice treatments and posttest modules can be replicated, and that the trends noted here in the initial experiment may either be verified or not.

To summarize, pretest-posttest research designs with control groups are susceptible to contamination from their placebo treatment and from their compliance with federal regulations legitimately protecting human subjects. Using single treatments and posttests, controlling the topic, matching pairs by both cognitive style and verbal abilities, and evaluating both the posttest and the written theme would guarantee greater purity in empirically describing and evaluating invention.

Pedagogical Recommendations and Implications

"The purpose of thinking," Edward deBono (1970) writes, "is not to be right but to be effective." He elaborates:

Being effective does eventually involve being right but there is a very important difference between the two. Being right means being right all the time. Being effective means being right only at the end."

The ultimate aim, then, for teaching invention with systematic heuristic procedures is intellectual effectiveness. What must be grappled with pedagogically is (1) whether or not these CAI modules stimulate invention as well as (or better than) current

instruction in invention, or (2) whether they effectively supplement current invention instruction. A questionnaire of college English teachers at the 1977 Conference on College Composition and Communication found that relatively few class periods are exclusively devoted to the teaching of specific invention strategies. Therefore, stimulating invention in English composition through computer-assisted instruction is (1) possible, (2) quantitatively effective, (3) qualitatively effective, and (4) individualized. Stimulating ideas via CAI is not (1) madness, (2) terribly costly, (3) boring, or (4) a passing fad. This study contributes some evidence that three heuristic strategies via CAI are better than what little individualized invention actually occurs in the composition classroom, at least as far as quantity, comprehensiveness, intellectual processing, and overall quality of ideas are concerned. To stimulate invention effectively means that it must be a one-on-one affair. Classroom lectures and general heuristic discussions, this research indicates, do not reach the heart of the matter--the systematic use of a particular inquiry tool on students' individual topics. However, the study is inconclusive about whether or not such instruction actually helps writers write. The data collection stops

short of a complete evaluation of the final research papers. Still, some pedagogical matters may be discussed.

One of the dangers of stimulating invention is overstimulation. Although the ultimate finding was not significant, the performance on the composition plan under the category of "suitable arrangement" favored the control group. The phenomenon of "rhetorical overload" is often blamed for students' inability to write; they so worry about the ideas, the arrangement, and the style of the finished product all through the composing process that they burn themselves out. What prevents the memory from overloading during the invention stage? A sense of arrangement? Aim? Number of pages? Specificity of the subject? Student's motivation? All of these responses seem probable. Others quickly come to mind, but suffice it to say that, rhetorically, writers must account for the reality, the audience, the message, and their own perceptions. That first rhetorical task confronts them during the invention stage; it may be overwhelming for the inexperienced writer who has not yet discriminated the parts from the whole.

The design and development of computer-assisted systems in the rhetorical arena are, of course, limited by factors common to communication and educational settings. As far as the operational cost, these CAI units ran at an average cost of slightly over a dollar per student. The CAI modules are relatively large BASIC programs, averaging over 1100 lines. Although the memory requirements vary depending on the system, approximately 20K accommodates each program on the DEC-10 (KI processor). Certain fundamental problems of cost and size certainly must be considered, but perhaps, more importantly, the systems themselves must be expanded so that student responses to the instruction may grow. To date, a common argument is that CAI systems talk more to the student than the student talks to the system (Annett and Duke, 1970, p. 32). While this restriction does not necessarily impair certain types of learning, such computer domination would certainly hinder CAI-prompted invention. Those educators who conceive of developing creative inquiry modules for computer presentation undoubtedly will have to address this specific issue: what is the appropriate ratio of student to system interaction in the creative process. Obviously, such research is well beyond the scope of a single dissertation, for not only does the

nature of the creative process need more definition, but also man-machine communication must be more refined to permit an understanding of natural language processing.

Another important pedagogical issue which will have to be researched at length is how a teacher can select the most appropriate heuristic strategy for the student. There ought to be a way to describe the way a student learns or inquires, and the teacher ought to be able to recognize those strategies and strengthen them. In other words, a teacher can encourage a harmonious relationship between students' unique heuristic strategies and those heuristic strategies which are perhaps more insightful, more comprehensive, and more interactive. As one of the teachers in the experiment noted afterwards, "I think there may be some value in discovering just what kind of students we have. The programs could serve diagnostic functions as well."

Perhaps the most significant implication pedagogically is how to integrate CAI supplementary invention with the other activities in the composition course. Having computer terminals available, having teachers aware that some students need more help with gathering ideas, having reluctant students overcome their computer-inspired anxiety, having a "climate of acceptance" among the English faculty, and having one or

two technical advisors in the computation center are all prerequisites for success. Fortunately, these problems are being overcome. Public computer facilities are appearing in many university libraries; writing laboratories have had computer terminals installed. The rhetorical renaissance continues in English departments as more and more interest is shown in the teaching of composition. Students are less reluctant than many people think; the subjects tended to ask more of the CAI modules than was possible for the programs to respond to appropriately: "What do you know about territorial limits? What can you tell me about coal gasification? Tell me what the librarian knows about underwater living?" The "climate of acceptance" will improve as teachers can pass some of their tedious "drill and practice" chores to the writing lab's computer, and as professors learn the advantages which the computer can make to their professional work: text editing and formatting, statistical analyses, grade averaging, bibliographical searches, interactive composing, and, in fact, supplementing their teaching. Practically speaking, how much time can a freshman composition realistically give each student when that student is searching for ideas to write about? Thirty minutes a week? If a teacher taught four sections, that

could mean up to 750 hours a semester. The technical help is probably already there; their interest will not be difficult to raise.

Summary

A rhetorical renaissance has recently emerged within the teaching of English composition, but so has an electronic revolution. What this research illustrates above all else is that rhetorical invention and computer technology are indeed compatible; combining heuristic "modes" and computer "media" can well serve and gladly teach the inquisitive writer. Briefly, the CAI modules significantly stimulated both quantity and quality of ideas over a control treatment. The experimental groups, however, became more alike after the computer-administered treatment; consequently, further comparative studies of the Aristotelian topoi, the dramatistic pentad, and the tagmemic matrix may have difficulty achieving statistically significant differences among the groups. Nevertheless, while there were no significant differences among the three experimental groups, some heuristic "trends" may be worth further study. The pentad seemed the most fluent; the tagmemic, the most intellectually interactive; and the Aristotle, the most insightful and the most

comprehensive. Stimulating invention in English composition through computer-assisted instruction is an effective way to begin teaching the art of systematic inquiry and a most appropriate introduction to the richness of heuristic strategies in general. While less desirable than the philosophers' stone, computer-assisted invention can be provided.

Postscript

One student--his name was Joe--at the end of his thirty-minute session, shouted, "Boy, this computer really drained my brain; I can't remember where I parked my bicycle." Another student attacked the system's vulnerability--in responding to questions the modules never say "no"--by asking if premarital sex was okay. Another student came by with his research paper completed a month early, saying he was going to give it to his teacher that afternoon. Four students came back and asked if they could do some more exploring on papers they had to write for other classes. One of the teachers inquired about Coleridge's metaphysics for a paper in a graduate seminar. A good friend on the faculty just wanted to see what I was up to, and he took over forty-five minutes to find out--exploring the dimensions of the writing process of all things.

Another teacher commented that his impression changed from "bad to open-minded curiosity" and that he now was "tempted." If this research has only served to drain brains and tempt colleagues, then it has served its purpose well.

As Norman Cousins (1966) once wrote, "A genuine purpose may be served by turning loose the wonders of the creative imagination on the kinds of problems being put to electronic tubes and transistors." The technology Cousins refers to is now nearly two "generations" beyond the tubes and transistors stage; imagine now turning loose the wonders of the creative spirit on the micro-electronic revolution.

What is the future of CAI in the English curricula? Will it be found in the drill and practice instructional programs only? Walter Maner (1975) foresees the day when generative computer-assisted instruction (GCAI) will emerge as the more effective instrument in the supplementary instructional repertoires of humanists. He writes:

According to some researchers, the future of ordinary CAI, with its canned questions and repertoire of canned answers, grows dimmer by the day. They would support the use of tedious frame-by-frame approach for only a few more years while educational technicians ready the more powerful generative and

simulation techniques.

It is not hard to see why. Once a GCAI program has been designed, it is capable of furnishing an inexhaustible supply of distinct problems (and solutions) for the student. (p. 117)

These perceptions are echoed by Dr. Seymour Papert (1978) of MIT:

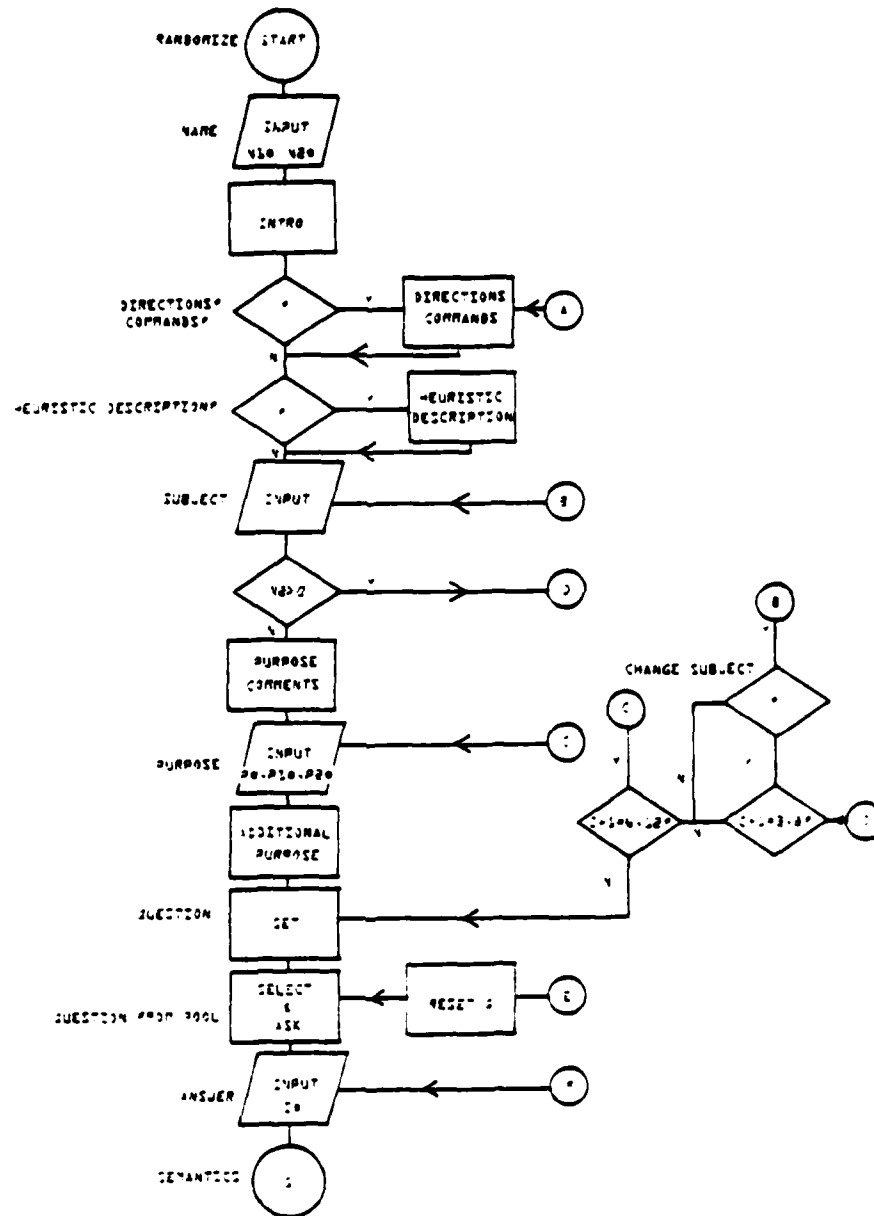
My experiences suggest that the computer can be a cornerstone of a new learning society if our society embraces the fact that the computer offers us some radically new possibilities to truly becoming a learning society. We are at a turning point because social habits are pushing us into taking what would be revolutionary and making it banal by trying to assimilate computers into educational models that we developed in a pre-computer era.

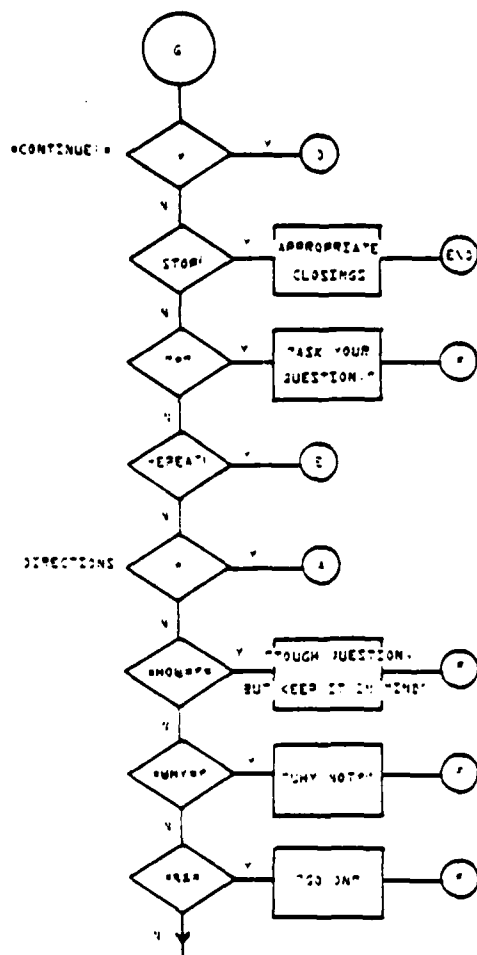
When we speak about scientific progress we speak of paradigm shifts--these are the stuff of which scientific revolutions are made. Our society needs a mandate to mobilize for such a paradigm shift in our way of looking at computers. Without it, our children will grow up in a computer culture, but one which has not been mobilized for educational revolution. (p. 32)

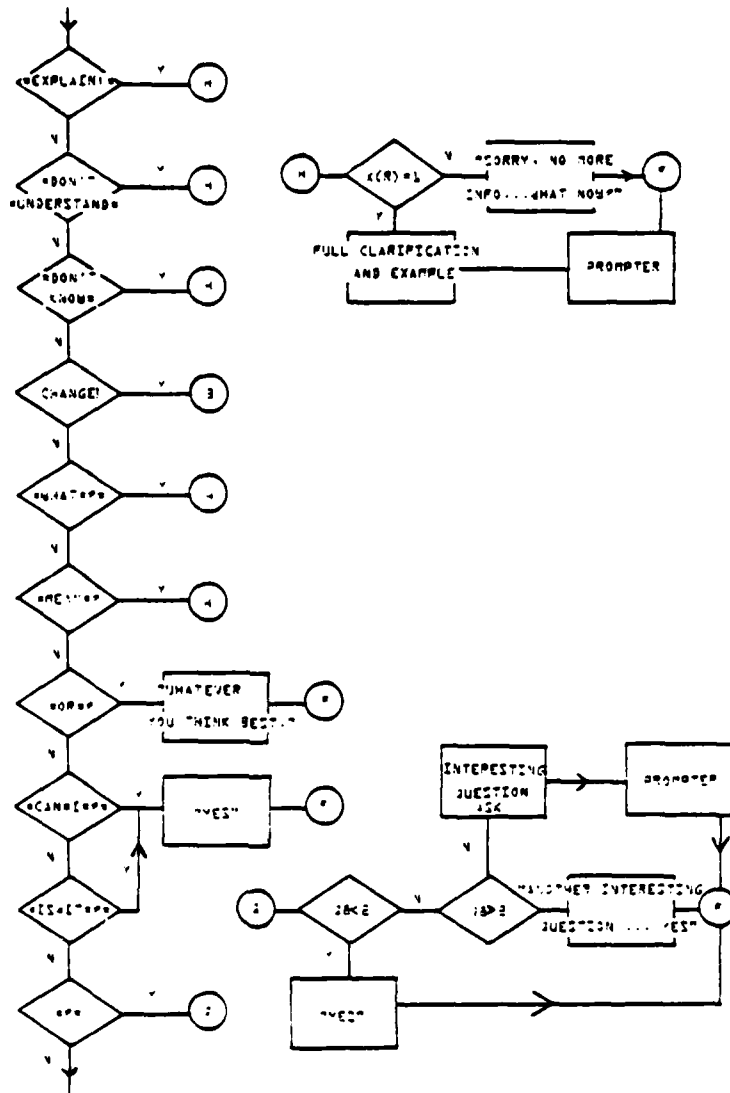
The CAI programs developed and evaluated in this research share the spirit of Maner's and Papert's remarks, for they anticipate the mobilization of an educational revolution in their stimulation of ideas outside a programmed content and in their sufficient, but admittedly limited, semantic capabilities.

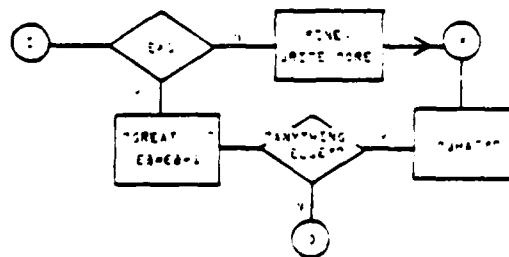
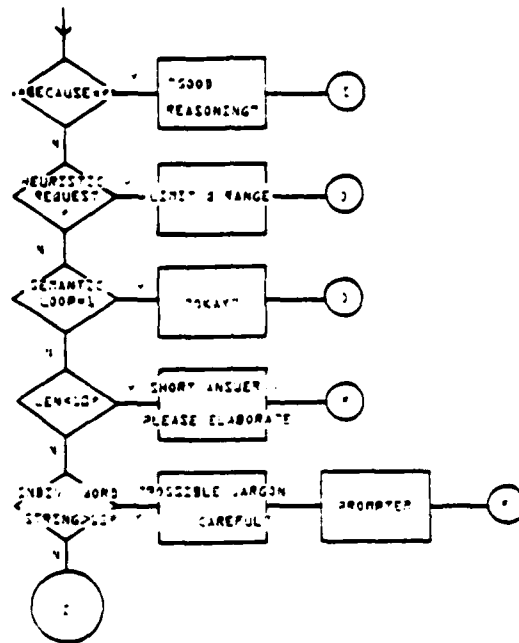
Moreover, research in rhetorical invention and in the entire composing process for that matter rests at the intersection of research in cognitive psychology, research in artificial intelligence, research in curriculum development, and research in educational psychology. Are not such matters well-known by sane people sufficiently interested in the problems of teaching composition? Again, if the humanities must suffer computer-assisted instruction, would not it be better for humanists to create the world they must suffer in?

APPENDIX A: Instructional Design Flowchart









APPENDIX B: Listings

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20010 REM <<< INVENTION PROGRAM: ARISTOTLE'S TOPICS >>>
20020 REM <<< AUTHOR: HUGH BURNS >>>
20021 REM <<< THIS PROGRAM MAY BE USED ONLY WITH THE AUTHOR'S PERM
ISSION.
20022 REM USE WITHOUT DIRECT PERMISSION VIOLATES COPYRIGHT LAW. >>
>
20030 RANDOMIZE
20040 DIM X(30)
20050 X(R)=0
20060 DIM Z(30)
20070 Z(R)=0
20080 E=L400=C=00=E3=0 'COUNTERS
20090 PRINT
20100 PRINT
20110 PRINT
20120 PRINT
20130 PRINT
20140 PRINT,"A COMPUTER-PROMPTED INVENTION PROGRAM:"
20150 PRINT,"-----"
20160 PRINT
20170 PRINT,"          ARISTOTLE'S TOPICS"
20180 PRINT,"          -----"
20190 PRINT
20200 PRINT
20210 PRINT
20220 PRINT
20230 PRINT,"HELLO AND WELCOME!"
20240 PRINT
20250 PRINT "PLEASE TYPE IN YOUR FIRST NAME: ";
20260 INPUT N1$
20270 IF N1$="" THEN 260
20280 PRINT
20290 PRINT "NOW, 'N1$', PLEASE TYPE IN YOUR LAST NAME: ";
20300 INPUT N2$
20310 IF N2$="" THEN 300
20312 IF N2$="TEST!" THEN 3330
20320 PRINT
20330 PRINT
20340 PRINT "WELL, 'N1' 'N2', I HOPE I CAN BE OF SOME ASSISTANCE"
20350 PRINT "TO YOU TODAY. IF WE TAKE EACH OTHER SERIOUSLY, YOU'LL"
20360 PRINT "THINK ABOUT YOUR TOPIC AS YOU NEVER HAVE BEFORE."
20370 PRINT
20380 PRINT
20390 PRINT "BEFORE WE BEGIN, 'N1', THERE'S AN OLD"
20400 PRINT "SAYING ABOUT COMPUTER-ASSISTED INSTRUCTION. IT GOES:"
20410 PRINT
20420 PRINT,"'GARBAGE IN, GARBAGE OUT!'"
20430 PRINT
20440 PRINT "IN OTHER WORDS, YOU AND I MUST WORK TOGETHER SO"
20450 PRINT "YOU CAN GET A GOOD START ON YOUR RESEARCH PAPER."
20460 PRINT
20470 PRINT
20480 PRINT
20490 PRINT,,"(PRESS 'RETURN' TO CONTINUE.)";
20500 INPUT AS
20510 PRINT
20520 PRINT
20530 PRINT
20540 PRINT "WOULD YOU LIKE TO REVIEW THE DIRECTIONS AND THE COMMANDS?"

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20550 PRINT,"(YES OR NO?)"
20560 JS="YVE."
20570 GOSUB 4000
20580 IF K101 THEN 600
20590 GOTO 1570
20600 REM *** DIRECTIONS AND COMMANDS ***
20610 PRINT
20620 PRINT
20630 PRINT,"DIRECTIONS:"
20640 PRINT
20650 PRINT
20660 PRINT,"1. WHEN YOU MAKE A TYPING ERROR, 'MIS', AND"
20670 PRINT,"WISH TO CORRECT IT, USE THE 'RUBOUT' OR 'RUB' KEY."
20680 PRINT,"THE 'SHIFT' MUST BE DEPRESSED WHEN YOU 'RUBOUT'."
20690 PRINT,"IT MAY LOOK A LITTLE FUNNY (LIKE WRITING BACKWARDS),"
20700 PRINT,"BUT DON'T WORRY! IT WORKS THAT WAY."
20710 PRINT
20720 PRINT
20730 PRINT,"2. REMEMBER THAT I CAN ONLY READ ABOUT A LINE AND"
20740 PRINT,"A HALF OF INFORMATION AT ONE TIME -- ABOUT THIS MUCH:"
20750 PRINT"-----"
20760 PRINT"-----"
20770 PRINT
20780 PRINT,"HIT 'RETURN' AT THAT POINT AND I'LL GENERALLY"
20790 PRINT,"LET YOU ADD MORE INFORMATION. IF THAT DOES NOT WORK,"
20800 PRINT,"TYPE 'AA' AND I'LL SAY 'GO ON, 'MIS'."
20810 PRINT
20820 PRINT
20830 PRINT,"(PRESS 'RETURNS' TO CONTINUE.)"
20840 INPUT A$
20850 PRINT
20860 PRINT
20870 PRINT,"3. AFTER YOU FINISH TYPING YOUR RESPONSE, YOU MUST PRESS"
20880 PRINT,"THE 'RETURN' KEY. WHEN YOU DO, I'LL READ YOUR"
20890 PRINT,"RESPONSE AND SAY SOMETHING BACK TO YOU."
20900 PRINT
20910 PRINT
20920 PRINT,"4. THE MOST IMPORTANT OBJECTIVE OF THIS PROGRAM"
20930 PRINT,"IS TO GET YOU THINKING ABOUT YOUR TOPIC."
20940 PRINT
20950 PRINT,"IN ORDER TO ACHIEVE THIS OBJECTIVE,"
20960 PRINT,"YOU ARE GOING TO HAVE TO FORGET THAT I AM A MACHINE."
20970 PRINT
20980 PRINT,"PLEASE ASK QUESTIONS. YOU'LL BE SURPRISED BY HOW MUCH"
20990 PRINT,"I KNOW (OR SO I HOPE!) I'M NOT"
21000 PRINT,"GUARANTEEING THE TRUTH, BUT I'LL DO THE BEST I CAN."
21010 PRINT,"MY MEMORY IS STILL DEVELOPING."
21020 PRINT
21030 PRINT
21040 PRINT
21050 PRINT,"(HIT 'RETURN' TO CONTINUE.)"
21060 PRINT
21070 PRINT
21080 INPUT A$
21090 PRINT
21100 PRINT
21110 PRINT
21120 PRINT,"COMMANDS:"

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21130 PRINT
21140 PRINT,"TYPE IN---", "I'LL DO THIS---"
21150 PRINT,"-----", "-----"
21160 PRINT
21170 PRINT,"STOP!", "I'LL STOP ASKING QUESTIONS AND CLOSE."
21180 PRINT
21190 PRINT,"CONTINUE!", "I'LL SKIP AHEAD TO THE NEXT QUESTION."
21200 PRINT
21210 PRINT,"REPEAT!", "I'LL REPEAT THE QUESTION."
21220 PRINT
21230 PRINT,"DIRECTIONS!", "I'LL SHOW YOU THESE DIRECTIONS AGAIN."
21240 PRINT
21250 PRINT,"CHANGE!", "I'LL LET YOU CHANGE OR NARROW YOUR SUBJECT."
21260 PRINT
21270 PRINT,"?", "I'LL LET YOU ASK A QUESTION."
21280 PRINT
21290 PRINT,"EXPLAIN!", "I'LL EXPLAIN THE QUESTION."
21300 PRINT,"(THIS ONE IS A LOT OF FUN, 'N15'.)"
21310 PRINT
21320 PRINT,"666", "I'LL LET YOU CONTINUE WITH YOUR RESPONSE."
21330 PRINT
21340 PRINT,"(PRESS 'RETURN' TO CONTINUE.)";
21350 INPUT AS
21360 PRINT
21370 PRINT
21380 PRINT
21390 PRINT
21400 PRINT,"TWO LAST THINGS!"
21410 PRINT
21420 PRINT,"... THINK OF ME AS A PERSON WHO CAN ASK A LOT OF"
21430 PRINT,"INTERESTING, THOUGHT-PROVOKING, AND WILD QUESTIONS."
21440 PRINT
21450 PRINT
21460 PRINT,"... SCREAM FOR HELP IF I START ACTING REALLY CRAZY!!"
21470 PRINT
21480 PRINT
21490 IF 001 THEN 1510
21500 GOTO 1570
21510 PRINT,"BACK TO THE QUESTIONS, 'N15' --- ---"
21520 PRINT
21530 PRINT
21540 PRINT
21550 PRINT,"BUT FIRST, IS THERE"
21560 GOTO 0050
21570 PRINT
21580 PRINT
21590 PRINT
21600 PRINT "WOULD YOU LIKE A BRIEF EXPLANATION OF HOW"
21610 PRINT "ARISTOTLE'S TOPICS HELP WRITERS WRITE?"
21620 PRINT,"(YES OR NO?)"
21630 JS0050
21640 GOSUB 4000
21650 IF 4101 THEN 1680
21670 GOTO 1930
21680 REM 444 DESCRIPTION OF ARISTOTLE'S TOPICS >>>
21690 PRINT
21700 PRINT
21710 PRINT,"I'M GLAD YOU ASKED, 'N15'. BRIEFLY, THE TWENTY-EIGHT"

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21720 PRINT "ENTWYHENE TOPICS HELP A WRITER (OR A SPEAKER) DISCOVER"
21730 PRINT "SPECIFIC ARGUMENTS ABOUT SUBJECTS."
21740 PRINT
21750 PRINT,"IN HIS 'RHETORIC', ARISTOTLE TELLS US THAT THE AIM OR GOA
L"
21760 PRINT "OF RHETORIC IS TO PERSUADE AN AUDIENCE. REMEMBER THAT TE
RM --"
21770 PRINT "PERSUADE."
21780 PRINT
21790 PRINT,"ARISTOTLE BELIEVED THAT IF HIS STUDENTS IN THE"
21800 PRINT "ACADEMY KNEW AND PRACTICED USING THE TOPICS, THEY WOULD B
ECOME"
21810 PRINT "EFFECTIVE 'PERSUADERS.'"
21820 PRINT
21830 PRINT,"YOU'LL RECOGNIZE AMONG THE TOPICS:"
21840 PRINT
21850 PRINT,"1. QUESTIONS OF DEFINITIONS;"
21860 PRINT,"2. QUESTIONS ABOUT CAUSES AND EFFECTS;"
21870 PRINT,"3. QUESTIONS REGARDING OPPOSITES AND ASSOCIATIONS;"
21880 PRINT,"4. QUESTIONS ABOUT CONSEQUENCES;"
21890 PRINT,"5. AND QUESTIONS ABOUT MATTERS OF FACT AND OPINION."
21900 PRINT
21910 PRINT,,"(HIT 'RETURN' TO CONTINUE.)"
21920 INPUT AS
21930 REM <<< SUBJECT SEQUENCE >>>
21940 PRINT
21950 PRINT
21960 PRINT
21970 PRINT
21980 PRINT
21990 PRINT
22000 PRINT
22010 PRINT
22020 PRINT
22030 PRINT
22040 PRINT,"NOW I NEED TO FIND OUT WHAT YOU"
22050 PRINT "ARE WRITING ABOUT, SO WOULD YOU PLEASE TYPE IN YOUR"
22060 PRINT "SUBJECT. I AM LOOKING FOR ONE TO THREE WORDS."
22070 PRINT
22080 PRINT
22090 PRINT
22100 PRINT
22110 PRINT
22120 PRINT
22130 PRINT,;
22140 INPUT SS
22150 IF SS="" THEN 2140
22160 IF LEN(SS)<40 THEN 2280
22170 PRINT
22180 PRINT "THAT'S A MOUTHFUL, 'N13". MAKE IT SHORTER, LIKE A TITLE.
"
22190 PRINT,"HERE ARE A FEW EXAMPLES:"
22200 PRINT
22210 PRINT," ** THE ENERGY CRISIS"
22220 PRINT," ** AUSTIN'S HISTORICAL GARDENS"
22230 PRINT," ** THE BERMUDA TRIANGE"
22240 PRINT
22250 PRINT
22260 PRINT,"YOUR TURN, WHAT IS YOUR SUBJECT?"
22270 GOTO 2120

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22200 IF N8>0 THEN 2300
22290 GOTO 2300
22300 PRINT
22310 PRINT "YOUR REVISED SUBJECT IS "SS"."
22320 PRINT
22330 PRINT
22340 PRINT
22350 PRINT
22360 PRINT
22370 GOTO 2210
22380 J=INT(3+RND*1)
22390 ON J GOTO 2400,2440,2480
22400 PRINT "INFORMAL ACKNOWLEDGEMENT OF SUBJECT
22410 PRINT "HOLY ELECTRONICS! THAT'S WEIRD, I USED TO DATE A COMPUTE
22420 PRINT "INTERESTED IN "SS"."
22430 GOTO 2520
22440 PRINT
22450 PRINT "HEY, THAT'S NEAT, "N13"! WE'LL HAVE A GOOD TIME THINKING
22460 PRINT "ABOUT "SS"."
22470 GOTO 2520
22480 PRINT
22490 PRINT "SS", "MMMM! WILL YOU BE AMAZED"
22500 PRINT "BY THE RECENT SCHOLARSHIP. BE SURE TO ASK THE LIBRARIAN"
22510 PRINT "IN THE REFERENCE AREA."
22520 REM *** PURPOSE SEQUENCE ***
22530 PRINT
22540 PRINT
22550 PRINT
22560 PRINT
22570 PRINT
22580 PRINT,"A COMMENT ABOUT PURPOSE:"
22590 PRINT
22600 PRINT
22610 PRINT
22620 PRINT,"DURING THIS EXPLORATION PROCESS,"
22630 PRINT,"YOU WILL BE ASKED TO CLARIFY THE PURPOSE OF"
22640 PRINT,"YOUR PAPER ON "SS"."
22650 PRINT
22660 PRINT
22670 PRINT,"SO NOW WOULD YOU BRIEFLY DESCRIBE WHAT THE PURPOSE"
22680 PRINT,"OF YOUR PAPER BY COMPLETING"
22690 PRINT,"THIS STATEMENT: THE PURPOSE OF THIS PAPER IS TO, . . ."
22700 PRINT,"(LIMIT: ONE LINE)"
22710 PRINT
22720 PRINT
22730 INPUT P$
22740 IF P$="" THEN 2720
22750 PRINT
22760 GOSUB 3321
22770 PRINT
22780 PRINT,"FINE, "N13", YOU AND I WILL TALK AGAIN ABOUT YOUR"
22790 PRINT,"PURPOSE."
22800 PRINT
22810 PRINT
22820 GOTO 3330
22830 PRINT "PURPOSE SUBROUTINE AT C-100
22840 PRINT

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22430 PRINT,"BEFORE WE CONTINUE, 'N18', I WANT YOU"
22440 PRINT,"TO THINK ABOUT YOUR PURPOSE ONCE AGAIN."
22450 PRINT
22460 PRINT,"YOU HAVE ALREADY TOLD ME THAT YOUR PURPOSE WAS"
22470 PRINT,"TO 'PS'."
22480 PRINT
22490 PRINT
22500 PRINT,"NOW WOULD YOU COMPLETE THIS STATEMENT?"
22510 PRINT
22520 PRINT,"IF NOTHING ELSE, I WANT MY READER TO UNDERSTAND. . . ."
22530 PRINT,"(ONE LINE, PLEASE)"
22540 PRINT
22550 PRINT
22560 INPUT P13
22570 IF P13="" THEN 22950
22580 PRINT
22590 GOSUB 3321
22600 PRINT,"OHAY, FINE. KEEP YOUR PURPOSE IN MIND AS WE CONTINUE."
22610 PRINT
22620 PRINT
22630 PRINT
22640 PRINT,"HERE IS YOUR NEXT QUESTION -- NUMBER'C+1'."
22650 PRINT
22660 PRINT
22670 GOTO 3530
22680 PRINT "PURPOSE SUBROUTINE AT C+1+12
22690 IF N000 THEN 3000
22700 PRINT
22710 PRINT,"LET'S PAUSE ONCE AGAIN TO CONSIDER YOUR INTENT."
22720 PRINT
22730 PRINT,"YOUR GENERAL PURPOSE IS TO"
22740 PRINT PS
22750 PRINT
22760 PRINT,"ALSO, YOU WANT YOUR READER TO UNDERSTAND"
22770 PRINT P13."
22780 PRINT
22790 PRINT
22800 PRINT,"IS THERE ANYTHING ELSE YOU WISH TO SAY ABOUT PURPOSE?"
22810 PRINT,"(YES OR NO?)"
22820 JS="YES"
22830 GOSUB 4000
22840 IF K1=1 THEN 3200
22850 PRINT
22860 PRINT,"FINE, 'N18', ENOUGH ABOUT PURPOSE."
22870 GOTO 3000
22880 PRINT
22890 PRINT,"GREAT, 'N18', WHAT WOULD YOU LIKE TO ADD?"
22900 PRINT,"(ONE LINE LIMIT IN EFFECT)"
22910 PRINT
22920 PRINT
22930 INPUT P25
22940 IF P25="" THEN 3300
22950 GOSUB 3321
22960 GOTO 3230
22970 PRINT
22980 PRINT,"ANY MORE?"
22990 PRINT,"(IF SO, TYPE WHATEVER IT IS) IF NOT, TYPE 'NO'."
23000 PRINT
23010 INPUT AS
23020 PRINT

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23910 GOTO 5050
23920 PRINT "DEFINE "SS"."
23930 GOTO 5050
23940 PRINT "FILL IN THE BLANKS IF "SS"."
23950 PRINT "THEN _____."
23960 GOTO 5050
23970 PRINT "FILL IN THE BLANKS IF "SS
23980 PRINT "PLUS _____, THEN _____."
23990 GOTO 5050
24000 PRINT "DIVIDE "SS" INTO THREE"
24010 PRINT "SUB-TOPICS."
24020 GOTO 5050
24030 PRINT "WHAT HAS BEEN DECIDED ABOUT "SS
24040 PRINT "TO DATE."
24050 GOTO 5050
24060 PRINT "WHAT STILL MUST BE DECIDED ABOUT"
24070 PRINT "SS"? DESCRIBE."
24080 GOTO 5050
24090 PRINT "WHAT ARE THE GOOD CONSEQUENCES OF"
24100 PRINT "SS"?
24110 GOTO 5050
24120 PRINT "WHAT ARE THE BAD CONSEQUENCES OF"
24130 PRINT "SS"? DESCRIBE."
24140 GOTO 5050
24150 PRINT "WHO MIGHT BELIEVE THAT THE GOOD CONSEQUENCES OF"
24160 PRINT "SS" ARE BAD?"
24170 GOTO 5050
24180 PRINT "WHO WOULD YOU CONSIDER AN AUTHORITY?"
24190 PRINT "ON "SS"?
24200 GOTO 5050
24210 PRINT "WHO GIVES (AND WHO RECEIVES) "SS"?
24220 GOTO 5050
24230 PRINT "WHAT MAKES YOU SOMETHING OF AN AUTHORITY ON "SS"?
24240 GOTO 5050
24250 PRINT "WHAT PARTS OF "SS" SHOULD BE"
24260 PRINT "DISCUSSED SEPARATELY?"
24270 GOTO 5050
24280 PRINT "DOES PUBLIC OPINION ABOUT "SS
24290 PRINT "DIFFER FROM PRIVATE OPINION?"
24300 GOTO 5050
24310 PRINT "DO ALL ASPECTS OF "SS" MAKE"
24320 PRINT "SENSE TO YOU? DESCRIBE THOSE THAT DO NOT."
24330 GOTO 5050
24340 PRINT "HOW DOES THE GENERAL PUBLIC FEEL"
24350 PRINT "ABOUT "SS"?
24360 GOTO 5050
24370 PRINT "WHAT COULD BE CONSIDERED A RESULT"
24380 PRINT "OF "SS"?
24390 GOTO 5050
24400 PRINT "WHAT COULD BE CONSIDERED A CAUSE"
24410 PRINT "OF "SS"?
24420 GOTO 5050
24430 PRINT "ARE THE RESULTS OF "SS" USUALLY"
24440 PRINT "THE SAME? DESCRIBE."
24450 GOTO 5050
24460 PRINT "WHAT MOTIVATES PEOPLE TOWARD OR"
24470 PRINT "AGAINST "SS"?
24480 GOTO 5050
24490 PRINT "WHAT WILL MAKE PEOPLE CHANGE THEIR MINDS ABOUT?"

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24500 PRINT "SS"?
24510 GOTO 5050
24520 PRINT "ARE THE CAUSES OF 'SS' ALWAYS"
24530 PRINT "THE SAME? DESCRIBE."
24540 GOTO 5050
24550 PRINT "WHAT'S INCREDIBLE ABOUT 'SS'?"
24560 GOTO 5050
24570 PRINT "ARE THE CAUSES OF 'SS' ALWAYS"
24580 PRINT "DIFFERENT? EXPLAIN."
24590 GOTO 5050
24600 PRINT "WHAT CONTRADICTIONS EXIST IN 'SS'?"
24610 GOTO 5050
24620 PRINT "WHAT FACTS ARE YOU UNLIKELY TO KNOW?"
24630 PRINT "ABOUT 'SS'?"
24640 GOTO 5050
24650 PRINT "ARE ALL THE FACTS ABOUT 'SS' AS"
24660 PRINT "CLEAR AS YOU WOULD LIKE? DESCRIBE THE AMBIGUITIES."
24670 GOTO 5050
24680 PRINT "WHAT IS A 'BETTER COURSE' FOR?"
24690 PRINT "SS" TO TAKE? RECOMMENDATIONS?"
24700 GOTO 5050
24710 PRINT "WHAT WOULD BE THE WORST THING THAT COULD HAPPEN TO?"
24720 PRINT "SS"?"
24730 GOTO 5050
24740 PRINT "WHAT WOULD BE THE BEST THING THAT COULD HAPPEN TO?"
24750 PRINT "SS"?"
24760 GOTO 5050
24770 PRINT "WHAT ARE SOME OF THE PREVIOUS MISTAKES ABOUT?"
24780 PRINT "SS"?"
24790 GOTO 5050
24800 PRINT "WHAT OBJECTS DO YOU ASSOCIATE?"
24810 PRINT "WITH 'SS'? HOW MIGHT THEY"
24820 PRINT "BE INCLUDED IN YOUR THEME?"
24830 GOTO 5050
24840 PRINT "WHAT'S INCONSISTENT ABOUT 'SS'?"
24850 PRINT "PLACES? PEOPLE? ACTIONS? PURPOSES?"
24860 GOTO 5050
24870 REM *** KEYWORD SUBROUTINE ***
24880 INPUT JS
24890 IF JS="" THEN 4880
24900 #1
24910 #101
24920 #2
24930 L=LEN(JS)
24940 V=INSTR(I,JS," ")
24950 T=SEM105(JS,I,V-1)
24960 V=INSTR(W,I,715)
24970 IF V<0 THEN 5000
24980 #102
24990 RETURN
25000 #V+1
25010 #V+101
25020 IF V<0 THEN 4940
25030 RETURN
25040 REM *** SIGNAL REMARKS (SEMANTIC STARS) FOR BRANCHING ***
25050 PRINT
25060 PRINT
25070 JS="CONTINUE!"
25080 GOSUB 1000
25090 IF #101 THEN 6100

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```

25092 IF IS="NO" THEN 4622
25100 JS="STOP!"
25110 GOSUB 4890
25120 IF K1=1 THEN 10323
25130 JS="REPEAT!"
25140 GOSUB 4890
25150 IF K1=1 THEN 7428
25160 IF IS="?" THEN 6758
25170 JS="DIRECTIONS!"
25180 GOSUB 4890
25190 Q=1
25200 IF K1=1 THEN 688
25210 JS="HOW?"
25220 GOSUB 4890
25230 IF K1=1 THEN 6812
25240 JS="WHY?"
25250 GOSUB 4890
25260 IF K1=1 THEN 6880
25270 JS="E."
25280 GOSUB 4890
25290 IF K1=1 THEN 6728
25300 JS="EXPLAIN!"
25310 GOSUB 4890
25320 IF K1=1 THEN 7478
25330 JS="DO NOT UNDERST."
25340 GOSUB 4890
25350 IF K1=1 THEN 7473
25360 JS="DO NOT KNOW."
25370 GOSUB 4890
25380 IF K1=1 THEN 7478
25390 JS="CHANGE!"
25400 GOSUB 4890
25410 IF K1=1 THEN 6928
25420 JS="WHAT?"
25430 GOSUB 4890
25440 IF K1=1 THEN 7478
25450 JS="MEAN?"
25460 GOSUB 4890
25470 IF K1=1 THEN 7478
25480 JS="OR?"
25490 GOSUB 4890
25500 IF K1=1 THEN 7808
25510 JS="CAN I?"
25520 GOSUB 4890
25530 IF K1=1 THEN 7940
25540 JS="IS IT?"
25550 GOSUB 4890
25560 IF K1=1 THEN 7848
25570 JS="BECAUSE."
25580 GOSUB 4890
25590 IF K1=1 THEN 7888
25600 JS="?"
25610 GOSUB 4890
25620 IF K1=1 THEN 7118
25630 IF L=1 THEN 6168 "COUNTER TO CONTINUE AUTOMATICALLY"
25635 IF 26=0 THEN 5780 "PREVENTS SHORT RESPONSES AFTER && COMMAND"
25640 IF LEN(IS) < 10 THEN 7248
25650 A=LEN(IS) "CHECKS LENGTH OF INDIVIDUAL WORDS IN STRING"
25660 FOR K=1 TO A-1
25670 IF MID(IS,K,1)="" THEN 5712

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25680 I=I+1
25690 IF I>15 THEN 5740
25700 GOTO 5720
25710 I=0
25720 NEXT K
25730 GOTO 5760
25740 I=2
25750 GOTO 6630
25760 I=0
25770 REM <<< EXPLORATION BRANCHING AND FEEDBACK >>>
25780 PRINT
25790 PRINT
25800 F1=INT(4*RN0+1)
25810 F2=INT(5*RN0+1)
25820 E=E+1
25830 IF E=1 THEN 5930
25840 ON F1 GOTO 5850,5870,5890,5910
25850 PRINT "GOOD, "N1S", ADD TO YOUR RESPONSE NOW."
25860 GOTO 5050
25870 PRINT "FINE, "N1S". WRITE SOME MORE."
25880 GOTO 5050
25890 PRINT "THAT'S THE IDEA, "N1S". GIVE ME SOME MORE INFO NOW."
25900 GOTO 5050
25910 PRINT "BY GEORGE, "N1S", GOOD ONE, WRITE A LITTLE MORE PLEASE."
25920 GOTO 5050
25930 ON F2 GOTO 5940,5960,5980,6000,6020
25940 PRINT "SUPER, "N1S"!"
25950 GOTO 6030
25960 PRINT "OUTSTANDING, "N1S"!"
25970 GOTO 6030
25980 PRINT "FANTASTIC, "N1S"!"
25990 GOTO 6030
26000 PRINT "TERRIFIC, "N1S"!"
26010 GOTO 6030
26020 PRINT "GREAT, "N1S"!"
26030 PRINT
26040 E3=E3+1 'E3=COUNTER FOR FULLY EXPLORED QUESTIONS
26050 PRINT,, "ANYTHING ELSE?"
26060 IF E3>2 THEN 6110
26070 PRINT,, "(YOU CAN ADD MORE INFO, ASK A"
26080 PRINT,, "QUESTION, OR GIVE A COMMAND --"
26090 PRINT,, "WHATEVER YOU WISH.)"
26100 PRINT
26110 JS="OYE="
26120 GOSUB 4880
26130 IF K1=1 THEN 6760
26140 L4=1
26150 GOTO 5100
26160 PRINT
26170 PRINT, "GRAY."
26180 PRINT
26190 IF C=103 THEN 7290
26200 IF C=108 THEN 7290
26210 IF C=106 THEN 2810
26220 IF C=1012 THEN 3060
26230 PRINT
26240 PRINT
26250 M8=INT(10*RN0+1)
26260 ON M8 GOTO 6270,6290,6310,6330,6350,6370,6390,6410,6430,6450

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26270 PRINT "(SEE IF YOU CAN USE SOME MORE ACTION VERBS IN YOUR RESPON
SE.)"
26280 GOTO 6460
26290 PRINT "(REMEMBER NOT TO WORRY ABOUT SPELLING!)"
26300 GOTO 6460
26310 PRINT "(I'LL EXPLAIN MORE IF YOU ASK ME ON THIS NEXT QUESTION.)"
26320 GOTO 6460
26330 PRINT "(AFTER I ASK THIS NEXT QUESTION, TYPE 'WHAT?' AND STAND B
ACK.)"
26340 GOTO 6460
26350 PRINT "(SEE IF YOU CAN USE THE WORD 'BECAUSE' IN YOUR NEXT ANSWE
R.)"
26360 GOTO 6460
26370 PRINT "(IF YOU DON'T UNDERSTAND, JUST SAY SO NEXT TIME. I'LL HE
LP.)"
26380 GOTO 6460
26390 PRINT "(I REPEAT QUESTIONS IF YOU TYPE 'REPEAT!)"
26400 GOTO 6460
26410 PRINT "(IF YOU NEED MORE ROOM, TYPE 'B' AT THE END OF A LINE.)"
26420 GOTO 6460
26430 PRINT "(TRY USING SOME MORE VERBS FOR BETTER EXPLANATIONS.)"
26440 GOTO 6460
26450 PRINT "(TRY EXPLAINING A LITTLE MORE. LESS PHRASES, MORE SENTEN
CES.)"
26460 PRINT
26470 PRINT
26480 PRINT
26490 PRINT
26500 C$=INT(5+RND*1)
26510 ON C$ GOTO 6520,6540,6560,6580,6600
26520 PRINT "WE'RE MOVING RIGHT ALONG. HERE IS QUESTION'C+1'."
26530 GOTO 6610
26540 PRINT "AND HERE COMES A REALLY INTERESTING QUESTION -- NUMBER'C+
1'."
26550 GOTO 6610
26560 PRINT "QUESTION'C+1'-- ONE OF MY ALL-TIME FAVORITES COMING UP."
26570 GOTO 6610
26580 PRINT "YOUR NEXT QUESTION IS NUMBER'C+1'."
26590 GOTO 6610
26600 PRINT "HERE IS QUESTION'C+1', 'NIS'."
26610 PRINT
26620 GOTO 5530
26622 PRINT "RESPONDS TO ISNO AFTER INVENTION PROMPTER
26623 PRINT "YOU COULD TELL ME 'WHY NOT', BUT YOU"
26624 PRINT "MAY JUST WANT TO CONTINUE. IF SO, TYPE 'CONTINUE!"
26625 PRINT "(DON'T FORGET THE EXCLAMATION POINT!)"
26626 GOTO 5850
26630 PRINT "RESPONSE TO 'GARBAGE' OR JARGON
26640 PRINT "HEY, 'NIS', WHAT KIND OF LANGUAGE IS THAT?"
26650 PRINT "TRY AGAIN. I JUST CAN'T UNDERSTAND WHAT YOU SAID?"
26660 PRINT
26670 PRINT "(YOU MAY HAVE RUN SOME OF YOUR WORDS TOGETHER,"
26680 PRINT "SO IF YOU CAN UNDERSTAND WHAT YOU MEAN, JUST"
26690 PRINT "KEEP ON ANSWERING THIS QUESTION. I'LL REPEAT"
26700 PRINT "THE QUESTION IF YOU TYPE 'REPEAT!)"
26710 GOTO 5850
26720 PRINT "ANSWERS THE COMMAND 'B'
26730 PRINT "GO ON, 'NIS'."
26735 C$=C$+1
26740 GOTO 5850

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06750 PRINT "ANSWERS THE SINGLE QUESTION MARK (IS=?)"
06760 PRINT "GO AHEAD, "N13", ASK. I'LL DO THE BEST I CAN."
06770 GOTO 5050
06780 PRINT "ANSWERS A *YE* TO ANYTHING ELSE?"
06790 PRINT "WHAT?"
06800 GOTO 5050
06810 PRINT "ANSWERS THE QUESTION *HOW*?"
06820 PRINT "I COULD SAY THAT THAT'S FOR ME TO KNOW AND FOR YOU TO FIG
0 OUT."
06830 PRINT
06840 PRINT "SERIOUSLY, I CANNOT PRETEND TO KNOW *HOW*, BUT YOU"
06850 PRINT "SHOULD KEEP EXPLORING FOR AN ANSWER."
06860 PRINT
06870 GOTO 5050
06880 PRINT "ANSWERS THE QUESTION *WHY*?"
06890 PRINT "WELL, *WHY* NOT? REMEMBER WE ARE EXPLORING, BRAINSTORMING!"
06900 PRINT
06910 GOTO 5050
06920 N06N0+1 "ANSWERS THE *CHANGE!* COMMAND
06930 IF N06N0 THEN 6970
06940 PRINT
06950 PRINT "GOOD FOR YOU, "N13". NOT EVERY WRITER NARROWS OR"
06960 PRINT "CHANGES HIS OR HER TOPIC THIS EARLY IN THE INVENTION PROC
ESS."
06970 PRINT
06980 PRINT "PLEASE TYPE IN YOUR NEW SUBJECT:"
06990 GOTO 2120
07000 PRINT "ANSWERS QUESTION *OR*?"
07010 PRINT "WHATEVER YOU THINK BEST, "N13". YOU DECIDE."
07020 PRINT
07030 GOTO 5050
07040 PRINT "ANSWERS QUESTION *CAN I*?"
07050 PRINT "YES, OF COURSE."
07060 PRINT
07070 GOTO 5050
07080 PRINT "RESPONDS TO SUBORDINATE *BECAUSE*"
07090 PRINT "I LIKE YOUR REASONING."
07100 GOTO 5050
07110 PRINT "RESPONDS TO *?"
07120 J06Q0+1
07130 IF J06Q2 THEN 7160
07140 IF J06Q2 THEN 7710
07150 PRINT "ANOTHER INTERESTING QUESTION. I'D SAY *YES*."
07160 PRINT
07170 GOTO 9910
07180 PRINT "YES, THAT SEEMS OKAY."
07190 PRINT
07200 GOTO 9970
07210 PRINT "THIS QUESTION MAY BE BETTER ANSWERED"
07220 PRINT "DURING THE RESEARCH PHASE. KEEP IT IN MIND."
07230 GOTO 9930
07240 PRINT "RESPONDS TO SHORT ANSWERS"
07250 PRINT "AMMM, SHORT AND SWEET, *HOW* TELL ME"
07260 PRINT "WHY? IN OTHER WORDS, ELABORATE A LITTLE."
07270 PRINT
07280 GOTO 5050
07290 PRINT "AUTO NARROW/CHANGE LOOP"
07300 PRINT

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27310 PRINT "DO YOU WISH TO NARROW OR CHANGE YOUR SUBJECT?"
27320 PRINT "(MAYBE REVISE THE WAY IT SOUNDS IN THESE QUESTIONS?)"
27330 PRINT, "(YES OR NO?)"
27340 JS="YES"
27350 GOSUB 4840
27360 IF A1=1 THEN 6920
27370 PRINT
27380 PRINT
27390 PRINT
27400 PRINT
27410 GOTO 6210
27420 PRINT "REPRINTS QUESTION"
27430 IF Q=0 THEN 3740
27440 IF Q=1000 THEN 3750
27450 IF Q=2000 THEN 3760
27460 IF Q=3000 THEN 3770
27470 REM "CLARIFICATION ARRAY AND EXAMPLE SEQUENCE"
27480 PRINT
27490 IF X(R)=1 THEN 9990
27500 X(R)=1
27510 IF R=11 THEN 7610
27520 IF R=21 THEN 7550
27530 IF R=31 THEN 7570
27540 IF R=39 THEN 7590
27550 R1=R1-10
27560 GOTO 7620
27570 R1=R1-20
27580 GOTO 7630
27590 R1=R1-30
27600 GOTO 7640
27610 ON R1 GOTO 7650,8320,8900,7830,7900,7960,8990,9770,8700,8190
27620 ON R1 GOTO 8260,7750,8410,8480,8530,8570,8620,8670,8120,8780
27630 ON R1 GOTO 8840,7890,8000,9070,9130,9160,9230,9280,9310,9370
27640 ON R1 GOTO 9440,9520,9560,9630,9670,9720,9750,9830
27650 PRINT "SOMETIMES A GOOD WAY TO DESCRIBE SOMETHING IS BY TELLING"
27660 PRINT "WHAT IT IS NOT. THERE MAY OR MAY NOT BE A DIRECT"
27670 PRINT "OPPOSITE OF '33', BUT"
27680 PRINT "SEE IF YOU CAN THINK OF ONE."
27690 PRINT
27700 PRINT "FOR EXAMPLE, IF I WERE WRITING A PAPER ON SOLAR"
27710 IF 38=4 THEN 9990
27720 PRINT "ENERGY, AN ANSWER TO THIS QUESTION MIGHT PRODUCE A"
27730 PRINT "LIST OF EARTH'S NATURAL ENERGY RESOURCES."
27740 GOTO 9990
27750 PRINT "A 'CONNOTATION' IS AN ASSOCIATION; A 'DENOTATION' IS"
27760 PRINT "A DICTIONARY MEANING. THIS TACTIC OF THINKING ABOUT"
27770 PRINT "THE INDIVIDUAL WORDS IN A TOPIC OFTEN BRINGS"
27780 PRINT "A FRESH INSIGHT."
27790 GOTO 9930
27800 PRINT "WHERE SHOULD I GO TO SEE '33'?"
27810 PRINT "CAN I GO INSIDE? CAN I GO OUTSIDE? WHY OR WHY NOT?"
27820 GOTO 9960
27830 PRINT "ARISTOTLE THOUGHT ABOUT TIME AND CHANGE OFTEN. DOES"
27840 PRINT "33 CHANGE OVER TIME?"
27850 PRINT
27860 PRINT "FOR EXAMPLE, IF I WERE WRITING A PAPER ABOUT DIAMOND MINING,"
27870 PRINT "I MIGHT WANT TO RESEARCH HOW TECHNOLOGY HAS CHANGED THE"
27880 PRINT "MINING PROCESS."

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07490 GOTO 9900
07490 PRINT "IF YOU HAVE A GOOD ANSWER HERE, YOU WILL PROBABLY WRITE"
07490 PRINT "A DECENT PAPER. BY 'SPECIAL', I MEAN 'UNIQUE'."
07490 PRINT "'INTERESTING', OR 'IMPORTANT'. THESE EXPERIENCES DO NOT"
07490 PRINT "NECESSARILY HAVE TO BE YOURS; YOU COULD PRETEND TO BE A"
07490 PRINT "REPORTER."
07490 GOTO 9930
07490 PRINT "YOU MIGHT SPEND ALL DAY ON THIS QUESTION, BUT I AM"
07490 PRINT "AFTER A SHORT DEFINITION. IN LESS THAN TWENTY WORDS,"
07490 PRINT "WHAT IS 'SS'?"
07490 GOTO 9960
08000 PRINT "THIS IS A TYPE OF INDUCTION, 'N13'. I AM NOT TRYING"
08010 PRINT "TO BE TRICKY. IN OTHER WORDS, IF YOUR TOPIC EXISTS,"
08020 PRINT "THEN OTHER THINGS--FEELINGS, ACTIONS, ETC.--ALSO EXIST,"
08030 PRINT "TRY MAKING A CONNECTION OR TWO."
08040 GOTO 9900
08050 PRINT "THIS QUESTION ASKS YOU TO CREATE A COMPLICATED"
08060 PRINT "INDUCTION. THINK OF IT IN MATHEMATICAL TERMS:"
08070 PRINT
08080 PRINT "IF  $2 \div 7$  THEN ?"
08090 PRINT
08100 PRINT "THERE ARE MANY ANSWERS ( $2 \div 2 = 4$ ,  $2 \div 90 = 92$ ,....)."
08110 GOTO 9930
08120 PRINT "I LIKE ASKING THIS QUESTION BECAUSE IT MAY HELP YOU ORGAN-
IZE"
08130 PRINT "YOUR PAPER. WHAT ARE THREE OF THE MAJOR PARTS THAT CREAT-
E"
08140 PRINT "THE WHOLE OF 'SS'?"
08150 PRINT
08160 PRINT "YOU MIGHT WANT TO WRITE SOMETHING HERE ABOUT HOW THESE"
08170 PRINT "PARTS ARE RELATED."
08180 GOTO 9960
08190 PRINT "DECISIONS HAVE BEEN MADE ABOUT 'SS'."
08200 PRINT "WHAT WERE THEY ABOUT? WHO MADE THEM?"
08210 PRINT
08220 PRINT "FOR EXAMPLE, IF I WERE WRITING A PAPER ABOUT INFLATION,"
08230 PRINT "I WOULD WANT TO WRITE A PARAGRAPH OR TWO ABOUT THE"
08240 PRINT "GOVERNMENT'S LEGISLATION TO DATE."
08250 GOTO 9900
08260 PRINT "WHAT DECISIONS WILL HAVE TO BE MADE IN THE FUTURE"
08270 PRINT "CONCERNING 'SS'."
08280 PRINT
08290 PRINT "FILL IN THE BLANKS: CONCERNING 'SS',"
08300 PRINT "WE MUST DECIDE WHETHER OR NOT TO DO _____"
08310 GOTO 9930
08320 PRINT "WHAT GOOD WILL COME ABOUT FROM HANKIND'S CONCERN ABOUT"
08330 PRINT "SS'?"
08340 PRINT
08350 PRINT "FOR EXAMPLE, IF I WERE WRITING A PAPER ABOUT COLLEGE"
08360 PRINT "ACADEMICS, SOME OF THE GOOD CONSEQUENCES MAY BE A BETTER"
08370 PRINT "JOB IN THE FUTURE, A FULLER UNDERSTANDING"
08380 PRINT "ABOUT OUR WORLD, AND AN APPRECIATION FOR GOOD STUDY HABIT-
S."
08390 PRINT "(STOP THE SNICKERING AND GET ON WITH AN ANSWER.)"
08400 GOTO 9960
08410 PRINT "WHAT BAD WILL COME ABOUT FROM HANKIND'S CONCERN ABOUT"
08420 PRINT "SS'?"
08430 PRINT

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28444 PRINT "IN OTHER WORDS, WHAT WAS, IS, AND WILL BE THE 'BAD NEWS'"
28452 PRINT "OF THIS TOPIC. IF YOU CANNOT THINK OF ANYTHING BAD, THEN
"
28460 PRINT "WHY NOT?"
28470 GOTO 9900
28480 PRINT "HERE, 'NIS', WE ARE SEARCHING FOR THE PEOPLE WHO"
28490 PRINT "HAVE COUNTER-ARGUMENTS, LAWYERS ARE ALWAYS INTERESTED"
28500 PRINT "IN THIS PARTICULAR QUESTION. MOST ISSUES WE WRITE ABOUT"
28510 PRINT "ARE NOT THAT CLEAR-CUT, NOT THAT 'BLACK AND WHITE.'"
28520 GOTO 9930
28530 PRINT "BY 'AUTHORITY', I MEAN A SO-CALLED EXPERT."
28540 PRINT "AS YOU WRITE THE PAPER, YOU MAY QUOTE THESE PEOPLE."
28550 PRINT "GENERALLY, THEIR OPINIONS ARE RESPECTED--IF NOT BELIEVED,
"
28560 GOTO 9960
28570 PRINT "I AM OFTEN SURPRISED BY THE CREATIVE ANSWERS TO THIS"
28580 PRINT "QUESTION. THERE IS USUALLY AN INSIGHT IN UNDERSTANDING"
28590 PRINT "THESE ROLES. BY 'GIVES', I MEAN 'IS RESPONSIBLE FOR'."
28600 PRINT "BY 'RECEIVES', I MEAN 'ACCEPTING THE CONSEQUENCES OF'."
28610 GOTO 9960
28620 PRINT "YOU PROBABLY DON'T THINK OF YOURSELF AS AN AUTHORITY."
28630 PRINT "SO PRETEND THAT YOU ARE. WHAT CREDENTIALS DO YOU THINK A
"
28640 PRINT "AUTHORITY ON 'SS' SHOULD HAVE?"
28650 PRINT "EDUCATION? POWER? WEALTH? COURAGE? HUMILITY?"
28660 GOTO 9900
28670 PRINT "BEFORE SOMEONE CAN UNDERSTAND 'SS',"
28680 PRINT "WHAT MATTERS MUST BE UNDERSTOOD BY THEMSELVES."
28690 GOTO 9930
28700 PRINT "BY 'PUBLIC OPINION', I MEAN THE POPULAR POINT OF VIEW."
28710 PRINT "BY 'PRIVATE OPINION', I MEAN THE WAY PEOPLE ACTUALLY BEHA
VE."
28720 PRINT "SOMETIMES, SUCH IRONIC DIFFERENCES HIGHLIGHT THE OLD ADAG
E."
28730 PRINT "'DO WHAT I SAY, NOT WHAT I DO!'"
28740 PRINT
28750 PRINT "FOR EXAMPLE, MANY FREE AND LIBERAL THINKERS MAY BE MORE"
28760 PRINT "CONSERVATIVE IN MAKING POLITICAL DECISIONS."
28770 GOTO 9960
28780 PRINT "THIS QUESTION IS INTENDED TO FIND OUT WHAT YOU DO NOT"
28790 PRINT "KNOW ABOUT 'SS'."
28800 PRINT
28810 PRINT "SO, MAKE A LIST OF THOSE THINGS THAT ARE UNCLEAR -- THE"
28820 PRINT "BEST WAY TO NEW INSIGHTS."
28830 GOTO 9900
28840 PRINT "WHAT ARE THE MOST POPULAR OPINIONS REGARDING"
28850 PRINT "SS?"
28860 PRINT
28870 PRINT "IF THERE WERE AN ELECTION ABOUT THIS TOPIC SOMEHOW,"
28880 PRINT "HOW WOULD THE VOTERS RESPOND? PRO? CON? WHY?"
28890 GOTO 9930
28900 PRINT "THIS QUESTION IS ABOUT CAUSES AND EFFECTS, BUT YOUR ANSWE
R"
28910 PRINT "SHOULD JUST MENTION THE EFFECTS, THE RESULTS, THE"
28920 PRINT "OUTCOMES OF 'SS'."
28930 PRINT
28940 PRINT "FOR EXAMPLE, IF I WERE WRITING A PAPER ABOUT EXERCISE,"
28950 PRINT "I WOULD WRITE ABOUT A STRONGER HEART, A NEW FOUND"
28960 PRINT "ALERTNESS, AND ANOTHER WAY TO SPEND MONEY (JOGGING SHOES,

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28970 PRINT "TENNIS RACKETS, BICYCLES, HEIGHTS, ETC.)"
28980 GOTO 9963
28990 PRINT "THIS QUESTION IS ABOUT CAUSES AND EFFECTS, BUT YOUR ANSWER"
29000 PRINT "SHOULD JUST MENTION THE CAUSES, THE REASONS,"
29010 PRINT "THE 'WHYS' REGARDING 'SS'."
29020 PRINT
29030 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT HUMAN RIGHTS PROGRAM"
29040 PRINT "I WOULD WRITE SOMETHING ABOUT THE"
29050 PRINT "OUTRAGES OF RACISM OUR WORLD HAS WITNESSED."
29060 GOTO 9928
29070 PRINT "BY 'RESULTS', I MEAN THE 'EFFECTS', YOU MAY HAVE TO DIG"
29080 PRINT "UP A LITTLE HISTORY TO ANSWER THIS QUESTION, OR YOU MAY"
29090 PRINT "HAVE TO PREDICT THE FUTURE. IN OTHER WORDS, CAN THE"
29100 PRINT "FINAL OUTCOMES OF THIS TOPIC BE PREDICTED OVER AND OVER"
29110 PRINT "AGAIN?"
29120 GOTO 9938
29130 PRINT "SIMPLY, WHAT MAKES PEOPLE FEEL THE WAY THEY DO?"
29140 PRINT "MORAL COMMITMENT? PLEASURE? FEAR? PEER PRESSURE? ETC."
29150 GOTO 9968
29160 PRINT "WHAT WOULD IT TAKE FOR MOST PEOPLE TO CHANGE THEIR MINDS"
29170 PRINT "ABOUT 'SS'?"
29180 PRINT
29190 PRINT "MOST OF THE ANSWERS TO THIS QUESTION HAVE SOMETHING TO DO"
29200 PRINT "WITH A PERSON'S DIRECT INVOLVEMENT WITH A SUBJECT LIKE"
29210 PRINT "YOURS, 'SS'."
29220 GOTO 9904
29230 PRINT "ARE THE ROOTS OF 'SS', FIGURATIVELY"
29240 PRINT "SPEAKING, ALWAYS THE SAME? LOOKING AT THIS MATTER"
29250 PRINT "ANOTHER WAY: COULD YOU DESCRIBE DIFFERENT EARLY"
29260 PRINT "SYMPTOMS? OR IS THERE JUST ONE SYMPTOM?"
29270 GOTO 9938
29280 PRINT "BY 'INCREDIBLE', I MEAN 'UNBELIEVABLE', 'AMAZING',"
29290 PRINT "'BEYOND HUMAN UNDERSTANDING', 'STRANGER THAN FICTION'."
29300 GOTO 9968
29310 PRINT "WHAT ARE SOME OF THE DIFFERENT EXPLANATIONS FOR THE"
29320 PRINT "EXISTENCE OF 'SS'?"
29330 PRINT
29340 PRINT "IF THERE ARE NONE, WHY? IS THERE"
29350 PRINT "REALLY THAT MUCH AGREEMENT?"
29360 GOTO 9908
29370 PRINT "BY 'CONTRADICTIONS', I MEAN 'THOSE MATTERS WHICH DO NOT'"
29380 PRINT "BELONG TOGETHER' OR 'KINDS OF IRONY'."
29390 PRINT
29400 PRINT "IN OTHER WORDS, WHAT SHOULDN'T BE THERE, BUT IS?"
29410 PRINT "OR (YOU GUESSED IT), WHAT SHOULD BE A PART OF"
29420 PRINT "SS", BUT IS NOT."
29430 GOTO 9938
29440 PRINT "I BET YOU ARE SAYING TO YOURSELF, 'HOW SHOULD I KNOW?'"
29450 PRINT
29460 PRINT "WELL, IF YOU ARE GOING TO WRITE A CONVINCING PAPER ABOUT"
29470 PRINT "SS", YOU MUST"
29480 PRINT "FIND OUT AS EARLY AS POSSIBLE THOSE AREAS WHICH NEED TO"
29490 PRINT "BE RESEARCHED. RIGHT NOW, I'M ASKING YOU TO PREDICT"
29500 PRINT "WHERE YOU CAN FIND SOME MORE FACTS."
29510 GOTO 9968

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29520 PRINT "WHAT PROBLEMS DO YOU HAVE UNDERSTANDING"
29530 PRINT SS" YOURSELF? BY 'AMBIGUITIES', I"
29540 PRINT "MEAN THOSE MIXED FEELINGS YOU MAY HAVE ABOUT THIS TOPIC."
29550 GOTO 9900
29560 PRINT "BY 'BETTER COURSE', I MEAN FOR YOU TO SUGGEST A BETTER"
29570 PRINT "SOLUTION TO ANY PROBLEMS ASSOCIATED WITH"
29580 PRINT SS".
29590 PRINT
29600 PRINT "IF YOU EXPECT PEOPLE TO BE CONVINCED BY YOUR ARGUMENT,"
29610 PRINT "YOU MUST OFFER THEM A SOUND SOLUTION."
29620 GOTO 9930
29630 PRINT "IF PEOPLE WERE NO LONGER CONCERNED ABOUT"
29640 PRINT SS", WOULD THAT BE"
29650 PRINT "THE WORST THING THAT COULD HAPPEN? WHY OR WHY NOT?"
29660 GOTO 9960
29670 PRINT "IF EVERYONE IN THE WORLD WAS AS CONCERNED ABOUT"
29680 PRINT SS" AS YOU ARE,"
29690 PRINT "WOULD THAT BE THE BEST THING THAT COULD HAPPEN?"
29700 PRINT "WHY OR WHY NOT?"
29710 GOTO 9900
29720 PRINT "SIMPLY, WHAT HAS BEEN WRONG WITH THE WAY"
29730 PRINT SS" HAS BEEN HANDLED."
29740 PRINT "MAYBE 'MISTAKE' IS TOO HARSH A TERM; 'MISTREATMENT' MAY"
29750 PRINT "BE BETTER FOR THIS TOPIC."
29760 GOTO 9900
29770 PRINT "IF I SAY 'BLACK', YOU SAY 'WHITE'."
29780 PRINT "IF I SAY 'HEADACHE', YOU SAY 'ASPIRIN'."
29790 PRINT
29800 PRINT "NOW, 'N13', IF I SAY 'SS',"
29810 PRINT "WHAT DO YOU SAY?"
29820 GOTO 9930
29830 PRINT "BY 'INCONSISTENT', I MEAN TO SUGGEST THOSE MATTERS"
29840 PRINT "WHICH SEEM 'OUT OF PLACE'."
29850 PRINT
29860 PRINT "'INCONSISTENT' MAY ALSO SUGGEST THAT SOME THINGS ABOUT"
29870 PRINT SS" CHANGE MORE OFTEN"
29880 PRINT "THAN OTHER THINGS. WHAT MIGHT THEY BE?"
29890 GOTO 9960
29900 PRINT "PROMPTERS AFTER CLARIFICATION"
29910 PRINT "TRY ANSWERING THIS QUESTION NOW."
29920 GOTO 5050
29930 PRINT
29940 PRINT "WHAT ARE YOU THINKING NOW, 'N13'?"
29950 GOTO 5050
29960 PRINT
29970 PRINT "YOUR TURN, 'N13'."
29980 GOTO 5050
29990 PRINT "SECOND RESPONSE AFTER CLARIFICATION REQUEST"
30000 PRINT "THAT'S ABOUT ALL I CAN ADD AT THE MOMENT. SORRY!"
30010 GOTO 9930
30020 REM *** CLOSING SEQUENCES ***
30030 IF C43 THEN 10200
30040 IF C47 THEN 10290
30050 PRINT
30060 PRINT
30070 PRINT "YOU EXPLORED E3 QUESTIONS OUT OF THE C I ASKED."
30080 PRINT "THAT'S (E3/C)=100 PERCENT."
30090 PRINT
30100 PRINT "LET ME REMIND YOU THAT YOU ARE STILL IN THE FIRST STAGES"

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10110 PRINT,"OF THE CREATIVE PROCESS. THESE IDEAS MUST SIMMER NO-,"
10120 PRINT
10130 PRINT,"ALSO, I HOPE YOU CAN CREATE SOME OF YOUR OWN 'TOPIC'"
10140 PRINT,"QUESTIONS. I WON'T ALWAYS BE AROUND TO HELP!!!"
10150 PRINT
10160 PRINT,,"HOPE YOUR PAPER IS TERRIFIC!"
10170 PRINT
10180 PRINT,,"GOOD BYE & GOOD LUCK!"
10190 STOP
10200 PRINT
10210 PRINT
10220 PRINT,"HMY, 'N1S', YOU ARE IN A HURRY TODAY,"
10230 PRINT
10240 PRINT,"YOU WILL NEED TO SPEND MORE TIME THINKING ABOUT"
10250 PRINT,"3S","
10260 PRINT
10270 PRINT,"SORRY I COULD NOT HELP YOU MORE. BYE,"
10280 STOP
10290 PRINT
10300 PRINT
10310 PRINT,"YOU ARE DEFINITELY A DEEP THINKER, 'N1S'."
10320 PRINT
10330 PRINT,"YOU WERE ASKED'C'QUESTIONS AND FULLY EXPLORED"
10340 PRINT,"E3"OF THEM,"
10350 PRINT
10360 PRINT,"PLEASE COME BACK AGAIN WHEN YOU CAN STAY LONGER,"
10370 PRINT
10380 PRINT,,"GOOD-BYE,"
10390 END
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20010 REM <<< INVENTION PROGRAM: BURKE'S DRAMATISTIC PENTAD >>>
20020 REM <<< AUTHOR: HUGH BURNS >>>
20021 REM <<< THIS PROGRAM MAY BE USED ONLY WITH THE AUTHOR'S PERM
13310N,
20022 REM USE WITHOUT DIRECT PERMISSION VIOLATES COPYRIGHT LAW, >>
>

30030 RANDOMIZE
20040 DIM Z(50)
00050 Z(0)=A
00060 DIM X(50)
20070 X(0)=0
00080 E=C=O=Q=R=E=J=L=A=N=N=S=8=A=A=G=8=Y=8=P=8=0 'COUNTERS
00090 PRINT
00100 PRINT
00110 PRINT
00120 PRINT
00130 PRINT
00140 PRINT,"A COMPUTER-ASSISTED INVENTION PROGRAM:"
00150 PRINT,"-----"
00160 PRINT
00170 PRINT,"          BURKE'S DRAMATISTIC PENTAD"
00180 PRINT,"          -----"
00190 PRINT
00200 PRINT
00210 PRINT
00220 PRINT
00230 PRINT,"GREETINGS! WELCOME TO CAI-PROMPTED INVENTION."
00240 PRINT
00250 PRINT "PLEASE TYPE IN YOUR FIRST NAME: ";
00260 INPUT N1$
00270 IF N1$="" THEN 260
00280 PRINT
00290 PRINT "NOW, "N1$", PLEASE TYPE IN YOUR LAST NAME: ";
00300 INPUT N2$
00310 IF N2$="" THEN 300
00312 IF N2$="TEST!" THEN 3590
00320 PRINT
00330 PRINT "THANK YOU, "N1$" "N2$". I HOPE I CAN BE OF SOME"
00340 PRINT "ASSISTANCE TO YOU TODAY. IF WE TAKE EACH OTHER SERIOUSLY"
"
00350 PRINT "I KNOW YOU'LL THINK ABOUT YOUR TOPIC AS YOU NEVER HAVE BE
FORE."
00360 PRINT
00370 PRINT,"BEFORE WE BEGIN, "N1$", THERE'S AN OLD"
00380 PRINT "SAYING ABOUT COMPUTER-ASSISTED INSTRUCTION. IT GOES:"
00390 PRINT
00400 PRINT,"GARBAGE IN, GARBAGE OUT!"
00410 PRINT
00420 PRINT "IN OTHER WORDS, YOU AND I HAVE GOT TO WORK TOGETHER SO"
00430 PRINT "YOU CAN GET A GOOD START ON YOUR RESEARCH PAPER."
00440 PRINT
00450 PRINT
00460 PRINT
00470 PRINT
00480 PRINT,"(PRESS 'RETURN' TO CONTINUE.)"
00490 PRINT
00500 INPUT A$
00510 PRINT
00520 PRINT

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20530 PRINT
20540 PRINT "WOULD YOU LIKE TO REVIEW THE DIRECTIONS AND COMMANDS?"
20550 PRINT "(YES OR NO?)"
20560 JS="YES"
20570 GOSUB 6590
20580 IF K1=1 THEN DOO
20590 GOTO 1670
20600 REM 444 DIRECTIONS ***
20610 PRINT
20620 PRINT
20630 PRINT "DIRECTIONS:"
20640 PRINT
20650 PRINT
20660 PRINT "1. WHEN YOU MAKE A TYPING ERROR, 'NIS', AND"
20670 PRINT "WISH TO CORRECT IT, USE THE 'RUBOUT' OR 'RUB'."
20680 PRINT "THE 'SHIFT' MUST BE DEPRESSED WHEN YOU 'RUBOUT'."
20690 PRINT "IT MAY LOOK A LITTLE FUNNY (LIKE WRITING BACKWARDS),"
20700 PRINT "BUT DON'T WORRY; IT WORKS THAT WAY."
20710 PRINT
20720 PRINT " (NOTE: SPELLING IS NOT CRUCIAL TO INVENTION.)"
20730 PRINT
20740 PRINT
20750 PRINT "2. REMEMBER THAT I CAN ONLY READ ABOUT A LINE AND"
20760 PRINT "A HALF OF INFORMATION AT ONE TIME -- ABOUT THIS MUCH:"
20770 PRINT
20780 PRINT "-----"
20790 PRINT
20800 PRINT "HIT 'RETURN' AT THAT POINT AND I'LL GENERALLY"
20810 PRINT "LET YOU ADD MORE INFORMATION. IF THAT DOES NOT WORK,"
20820 PRINT "TYPE 'SS' AND I'LL SAY 'GO ON, NIS'."
20830 PRINT
20840 PRINT "(PRESS 'RETURN' TO CONTINUE.)"
20850 INPUT AS
20860 PRINT
20870 PRINT
20880 PRINT
20890 PRINT "3. AFTER YOU FINISH TYPING YOUR RESPONSE, YOU MUST PRESS"
20900 PRINT "THE 'RETURN' KEY."
20910 PRINT
20920 PRINT
20930 PRINT
20940 PRINT "4. THE MOST IMPORTANT OBJECTIVE OF THIS PROGRAM"
20950 PRINT "IS TO GET YOU THINKING ABOUT YOUR TOPIC."
20960 PRINT
20970 PRINT "IN ORDER TO ACHIEVE THIS OBJECTIVE,"
20980 PRINT "YOU SHOULD FORGET THAT I AM A MACHINE."
20990 PRINT
21000 PRINT "PLEASE ASK QUESTIONS. I'M NOT GUARANTEEING CONTENT"
21010 PRINT "ORIENTED RESPONSES, OR EVEN THE TRUTH, BUT I'LL DO"
21020 PRINT "THE BEST I CAN."
21030 PRINT
21040 PRINT
21050 PRINT
21060 PRINT "(PRESS 'RETURN' TO CONTINUE.)"
21070 PRINT
21080 PRINT
21090 INPUT AS

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21100 PRINT
21110 PRINT
21120 PRINT
21130 PRINT
21140 PRINT "COMMANDS:", "TYPE IN-->", "I'LL DO THIS-->"
21150 PRINT, "-----", "-----"
21160 PRINT
21170 PRINT, "STOP!", "I'LL STOP ASKING QUESTIONS AND CLOSE."
21180 PRINT
21190 PRINT, "CONTINUE!", "I'LL SKIP AHEAD TO THE NEXT QUESTION."
21200 PRINT
21210 PRINT, "REPEAT!", "I'LL REPEAT THE QUESTION."
21220 PRINT
21230 PRINT, "DIRECTIONS!", "I'LL SHOW YOU THESE DIRECTIONS."
21240 PRINT
21250 PRINT, "CHANGE!", "I'LL LET YOU CHANGE YOUR SUBJECT."
21260 PRINT
21270 PRINT, "?", "I'LL LET YOU ASK A QUESTION."
21280 PRINT
21290 PRINT, "EXPLAIN!", "I'LL EXPLAIN THE QUESTION."
21300 PRINT
21310 PRINT, "SCENE!", "I'LL ASK YOU A 'SCENE' QUESTION."
21320 PRINT, "ALSO, I'LL LET YOU ASK FOR 'ACT', "
21330 PRINT, "'AGENT', 'AGENCY', AND 'PURPOSE'."
21340 PRINT
21350 PRINT, "!!", "I'LL LET YOU CONTINUE WITH YOUR RESPONSE."
21360 PRINT
21370 PRINT, "(PRESS 'RETURN' TO CONTINUE.)"
21380 INPUT A$
21390 PRINT
21400 PRINT
21410 PRINT
21420 PRINT
21430 PRINT
21440 PRINT, "TWO LAST THINGS:"
21450 PRINT
21460 PRINT, "1. THINK OF ME AS A PERSON WHO CAN ASK A LOT OF GOOD"
21470 PRINT, "QUESTIONS."
21480 PRINT
21490 PRINT, "2. SCREAM FOR HELP IF I START ACTING REALLY CRAZY!!"
21500 PRINT
21510 PRINT
21520 PRINT
21530 PRINT
21540 PRINT
21550 PRINT
21560 PRINT
21570 PRINT
21580 PRINT
21590 IF J=1 THEN 1613
21600 GOTO 1720
21610 PRINT, "BACK TO THE QUESTIONS, 'N15' --- ---"
21620 PRINT
21630 PRINT
21640 PRINT
21650 PRINT, "BUT FIRST, IS THERE"
21660 GOTO 1410
21670 PRINT
21680 PRINT
21690 PRINT

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21720 PRINT "WOULD YOU LIKE TO REVIEW KENNETH BURKE'S PENTAO?"
21730 PRINT "(YES OR NOT)"
21740 JS="YES"
21750 GOSUB 6590
21760 IF K101 THEN 1760
21770 GOTO 2020
21780 REM *** PENTAO DESCRIPTION ***
21790 PRINT
21800 PRINT
21810 PRINT "BRIEFLY, KENNETH BURKE'S DRAMATISTIC PENTAO"
21820 PRINT "ENCOURAGES A WRITER TO THINK ABOUT A SUBJECT FROM FIVE"
21830 PRINT "PERSPECTIVES."
21840 PRINT
21850 PRINT "1. SCENE", "WHERE AND WHEN SOMETHING HAPPENS."
21860 PRINT
21870 PRINT "2. ACT", "WHAT HAPPENS."
21880 PRINT
21890 PRINT "3. AGENT", "WHO CAUSES WHAT HAPPENS TO HAPPEN."
21900 PRINT
21910 PRINT "4. AGENCY", "BY WHAT MEANS DOES SOMETHING HAPPEN."
21920 PRINT
21930 PRINT "5. PURPOSE", "WHY SOMETHING HAPPENS."
21940 PRINT
21950 PRINT "BURKE ALSO ENCOURAGES WRITERS TO SEE THE RELATIONSHIPS"
21960 PRINT "AMONG THESE PERSPECTIVES. HE CALLS THESE RELATIONSHIPS,"
21970 PRINT "THE RATIOS."
21980 PRINT
21990 PRINT
22000 PRINT, "(HIT 'RETURN' TO CONTINUE):"
22010 INPUT AS
22020 REM *** SUBJECT SEQUENCE ***
22030 PRINT
22040 PRINT
22050 PRINT
22060 PRINT
22070 PRINT
22080 PRINT
22090 PRINT
22100 PRINT
22110 PRINT
22120 PRINT
22130 PRINT "NOW I NEED TO FIND OUT WHAT YOU"
22140 PRINT "ARE WRITING ABOUT, SO WOULD YOU PLEASE TYPE IN YOUR"
22150 PRINT "SUBJECT. I AM LOOKING FOR ONE TO THREE WORDS."
22160 PRINT
22170 PRINT
22180 PRINT
22190 PRINT
22200 PRINT
22210 PRINT
22220 PRINT,
22230 INPUT SS
22240 IF SS="" THEN 2220
22250 IF LEN(SS)>40 THEN 2400
22260 PRINT
22270 PRINT "THAT'S A MOUTHFUL, 'N15'. MAKE IT SHORTER--LIKE A 'TITLE'."
22280 PRINT
22290 PRINT "HERE ARE A FEW EXAMPLES:"

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02290 PRINT
02300 PRINT
02310 PRINT, "      • HUMAN RIGHTS"
02320 PRINT, "      • INFLATION"
02330 PRINT, "      • GLASS BLOWING IN MEXICO"
02340 PRINT
02350 PRINT
02360 PRINT, "YOUR TURN. WHAT IS YOUR SUBJECT?"
02370 PRINT
02380 PRINT
02390 GOTO 2220
02400 IF N400 THEN 2420
02410 GOTO 2512
02420 PRINT
02430 PRINT "YOUR REVISED SUBJECT IS 'SS'."
02440 PRINT
02450 PRINT
02460 PRINT
02470 PRINT
02480 PRINT
02490 PRINT
02500 GOTO 8090
02510 JOIN(3000+1)
02520 ON J GOTO 2530,2570,2610
02530 PRINT "INFORMAL ACKNOWLEDGEMENT OF SUBJECT"
02540 PRINT "REALLY! WHAT A COINCIDENCE--I ONCE READ A"
02550 PRINT "BOOK ABOUT 'SS'."
02560 GOTO 2050
02570 PRINT
02580 PRINT "HEY, THAT'S NEAT, 'NIS'! WE'LL ENJOY EXPLORING"
02590 PRINT "SS'."
02600 GOTO 2050
02610 PRINT
02620 PRINT "BE SURE TO ASK THE REFERENCE LIBRARIAN ABOUT THE RECENT"
02630 PRINT "RESEARCH ON 'SS'. YOU'LL BE"
02640 PRINT "WELL-REWARDED."
02650 PRINT
02660 PRINT, "(HIT 'RETURN' TO CONTINUE.)"
02670 INPUT A$
02680 REM 444 PURPOSE SEQUENCE >>>
02690 PRINT
02700 PRINT
02710 PRINT
02720 PRINT
02730 PRINT, "A COMMENT ABOUT YOUR PURPOSE?"
02740 PRINT
02750 PRINT
02760 PRINT
02770 PRINT, "DURING THIS EXPLORATION PROCESS,"
02780 PRINT, "YOU WILL BE ASKED TO CLARIFY THE PURPOSE OF"
02790 PRINT, "YOUR PAPER ON 'SS'."
02800 PRINT
02810 PRINT
02820 PRINT, "SO NOW WOULD YOU BRIEFLY DESCRIBE THE PURPOSE"
02830 PRINT, "OF YOUR PAPER BY COMPLETING THIS STATEMENT?"
02840 PRINT
02850 PRINT "THE PURPOSE OF MY PAPER IS 'O. . .'"
02860 PRINT, "(ONE LINE LIMIT, PLEASE)"
02870 PRINT

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22870 PRINT
22880 PRINT
22890 PRINT
22900 PRINT
22910 PRINT
22920 PRINT
22930 INPUT P9
22940 IF P9="" THEN 2930
22950 PRINT
22960 GOSUB 3581
22970 PRINT
22980 PRINT,"FINE, "N13", YOU AND I WILL TALK AGAIN ABOUT YOUR"
22990 PRINT,"PURPOSE."
23000 PRINT
23010 GOTO 3590
23020 PRINT "PURPOSE SEQUENCE AT C+1=6
23030 PRINT
23040 PRINT,"BEFORE WE CONTINUE, "N13", I WANT YOU"
23050 PRINT,"TO THINK ABOUT YOUR PURPOSE ONCE AGAIN."
23060 PRINT
23070 PRINT "YOU HAVE ALREADY TOLD ME THAT YOUR PURPOSE WAS"
23080 PRINT "TO "P9"."
23090 PRINT
23100 PRINT
23110 PRINT,"NOW HOW WOULD YOU COMPLETE THIS STATEMENT?"
23120 PRINT
23130 PRINT,"IF NOTHING ELSE, I WANT MY READER TO UNDERSTAND. . . ."
23131 PRINT,"(LIMIT: ONE LINE)"
23140 PRINT
23150 PRINT
23160 INPUT P13
23170 IF P13="" THEN 3160
23180 PRINT
23181 GOSUB 3581
23190 PRINT "OKAY, GOOD. KEEP PURPOSE IN MIND AS WE CONTINUE."
23200 IF 3901 THEN 4220
23210 IF 4901 THEN 4360
23220 IF 5901 THEN 4510
23230 IF 6901 THEN 4660
23240 IF 7901 THEN 4810
23250 PRINT
23260 PRINT
23270 PRINT
23280 PRINT,"HERE IS YOUR NEXT QUESTION -- NUMBER"C+1"."
23290 PRINT
23300 IF C>5 THEN 3820
23310 Z(3)+Z(4)+Z(5)+Z(6)+Z(7)+Z(8)+Z(9)+Z(10)+0 "RESET POOL
23320 X(3)+X(4)+X(5)+X(6)+X(7)+X(8)+X(9)+X(10)+0 "RESET CLARIFICATION
4
23330 GOTO 3820
23340 PRINT "PURPOSE SEQUENCE AT C+1=12
23350 IF 4800 THEN 3200
23360 PRINT
23370 PRINT,"LET'S PAUSE ONCE AGAIN TO CONSIDER YOUR INTENT."
23380 PRINT
23390 PRINT,"YOUR GENERAL PURPOSE IS TO"
23400 PRINT P9"."
23410 PRINT
23420 PRINT,"ALSO, YOU WANT YOUR READER TO UNDERSTAND"

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23430 PRINT P13;"
23440 PRINT
23450 PRINT "IS THERE ANYTHING ELSE YOU WISH TO SAY ABOUT YOUR PURPOSE
?"
23460 PRINT "(YES OR NO?)"
23470 JS="YES"
23480 GOSUB 6590
23490 IF K1=1 THEN 3530
23500 PRINT
23510 PRINT "FINE, "N13", ENOUGH ABOUT YOUR PURPOSE."
23520 GOTO 3200
23530 PRINT
23540 PRINT "GREAT, "N13", WHAT WOULD YOU LIKE TO ADD?"
23541 PRINT "(ONE LINE LIMIT IN EFFECT)"
23550 PRINT
23560 INPUT P23
23570 IF P23="" THEN 3560
23571 GOSUB 3581
23580 GOTO 3180
23581 PRINT
23582 PRINT "ANY MORE?"
23583 PRINT "(IF SO, TYPE WHATEVER IT IS; IF NOT, TYPE 'NO'.)"
23584 PRINT
23585 INPUT A3
23586 PRINT
23587 RETURN
23590 PRINT "PAGING QUESTION SEQUENCE
23600 PRINT
23610 PRINT
23620 PRINT
23630 PRINT
23640 PRINT
23650 PRINT
23660 PRINT
23670 PRINT
23680 PRINT
23690 PRINT
23700 PRINT "RELAX NOW, "N13", AND ENJOY THIS EXPLORATION OF"
23710 PRINT "33"."
23720 PRINT
23730 PRINT
23740 PRINT
23750 PRINT
23760 PRINT
23770 PRINT
23780 PRINT
23790 PRINT
23800 PRINT
23810 REM *** COUNTER/EXPLORATION CONTROLS ***
23820 C=C+1
23830 E=C*Q8+Q6+59+49+G9+Y9+P9+0
23840 IF C>50 THEN 12440 "POOL EXHAUSTED--AUTO-CLOSE
23850 IF C>5 THEN 4300 "OPENS TOTAL POOL
23860 Z=INT(10*P9+1) "RESTRICTS POOL FOR FULL CLARIFICATION
23870 IF Z(2)=1 THEN 3860
23880 Z(2)=1
23890 GOTO 3900,3900,3920,3920,3940,3940,3960,3960,3980,3990
23900 38=38+1
23910 GOTO 4950

```



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23920  A8=A8+1
23930  GOTO 4960
23940  G8=G8+1
23950  GOTO 4970
23960  Y8=Y8+1
23970  GOTO 4980
23980  P8=P8+1
23990  GOTO 4990
24000  C=0;INT(50*RND+1)
24010  IF Z(2)=1 THEN 4000
24020  Z(2)=1
24030  IF 2411 THEN 3900'SCENE (3)
24040  IF 2421 THEN 4000'ACT (A)
24050  IF 2431 THEN 4100'AGENT (G)
24060  IF 2441 THEN 4120'AGENCY (Y)
24070  IF 2451 THEN 4140'PURPOSE (P)
24080  C=C-10
24090  GOTO 3920
24100  C=C-20
24110  GOTO 3940
24120  C=C-30
24130  GOTO 3960
24140  C=C-40
24150  GOTO 3980
24160  REM *** PENTAD SUBJECT-CONTROLLED BRANCHING ***
24170  S9=1 'REMEMBERS SCENE REQUEST IF ROUTED
24180  C=C+1
24190  IF C=6 THEN 3020
24200  IF C=12 THEN 3340
24210  IF C>50 THEN 12040
24220  IF 3020 THEN 4910
24230  A9=G8+Y9+P9+E=L4+Q8+Q0=0
24240  C=0;INT(10*RND+1)
24250  IF Z(2)=1 THEN 4240
24260  Z(2)=1
24270  PRINT
24280  PRINT 'HERE IS QUESTION"C"FROM THE "SCENE" PERSPECTIVE:'
24290  PRINT
24300  GOTO 3900
24310  A9=1 'REMEMBERS ACT REQUEST IF ROUTED
24320  C=C+1
24330  IF C=6 THEN 3020
24340  IF C=12 THEN 3340
24350  IF C>50 THEN 12040
24360  IF A9=9 THEN 4910
24370  S9=G8+Y9+P9+E=L4+Q8+Q0=0
24380  C=0;INT(20*RND+1)
24390  IF 2411 THEN 4300
24400  IF Z(2)=1 THEN 4380
24410  Z(2)=1
24420  PRINT
24430  PRINT 'HERE IS QUESTION"C"FROM THE "ACT" PERSPECTIVE:'
24440  PRINT
24450  GOTO 4000
24460  S9=1 'REMEMBERS AGENT REQUEST IF ROUTED
24470  C=C+1
24480  IF C=6 THEN 3020
24490  IF C=12 THEN 3340
24500  IF C>50 THEN 12040

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24510 IF G8>9 THEN 4913
24520 39=A9+Y9+P9+E=L4+Q8+Q6+0
24530 2=RR1=INT(32+RND*1)
24540 IF 2=21 THEN 4530
24550 IF Z(2)=1 THEN 4530
24560 Z(2)=1
24570 PRINT
24580 PRINT "HERE IS QUESTION"C"FROM THE 'AGENT' PERSPECTIVE:"
24590 PRINT
24600 GOTO 4100
24610 Y9=1 "REMEMBERS AGENCY REQUEST IF ROUTED
24620 C=C+1
24630 IF C=6 THEN 3020
24640 IF C=12 THEN 3340
24650 IF C>50 THEN 12640
24660 IF Y8>9 THEN 4913
24670 39=A9+G9+P9+E=L4+Q8+Q6+0
24680 2=RR1=INT(40+RND*1)
24690 IF 2=31 THEN 4600
24700 IF Z(2)=1 THEN 4600
24710 Z(2)=1
24720 PRINT
24730 PRINT "HERE IS QUESTION"C"FROM THE 'AGENCY' PERSPECTIVE:"
24740 PRINT
24750 GOTO 4120
24760 P9=1 "REMEMBERS PURPOSE REQUEST IF ROUTED
24770 C=C+1
24780 IF C=6 THEN 3020
24790 IF C=12 THEN 3340
24800 IF C>50 THEN 12640
24810 IF P8>9 THEN 4913
24820 39=A9+Y9+G9+E=L4+Q8+Q6+0
24830 2=RR1=INT(50+RND*1)
24840 IF 2=41 THEN 4830
24850 IF Z(2)=1 THEN 4830
24860 Z(2)=1
24870 PRINT
24880 PRINT "HERE IS QUESTION"C"FROM THE 'PURPOSE' PERSPECTIVE:"
24890 PRINT
24900 GOTO 4140
24910 PRINT "PARTICULAR POOL EXHAUSTED
24920 PRINT "SORRY, "N18", NO MORE QUESTIONS LEFT HERE, WHAT NO#?"
24930 L4=1
24940 GOTO 6760
24950 ON 2 GOTO 5220,5240,5270,5100,5130,5160,5190,5220,5250,5280
24960 ON 2 GOTO 5320,5340,5360,5400,5440,5480,5510,5540,5570
24970 ON 2 GOTO 5610,5640,5670,5710,5740,5780,5820,5850,5880,5910
24980 ON 2 GOTO 5950,5990,6020,6050,6080,6110,6140,6180,6220,6240
24990 ON 2 GOTO 6280,6320,6350,6380,6410,6440,6470,6500,6540
25000 REM " 444 QUESTION POOL FOR BURKE'S PENTAO >>>
25010 REM " 444 SCENE QUESTIONS >>>
25020 PRINT "WHERE DOES '33' OCCUR? DESCRIBE,"
25030 GOTO 6750
25040 PRINT "WHAT IS THE SETTING FOR '33'?"
25050 PRINT "DESCRIBE,"
25060 GOTO 6750
25070 PRINT "WHAT IS THE BACKGROUND FOR '33'?"
25080 PRINT "EXPLAIN,"
25090 GOTO 6750

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25100 PRINT "WHAT PARTICULARS OF THE SETTING INFLUENCE"
25110 PRINT "SS"? DESCRIBE."
25120 GOTO 6750
25130 PRINT "IS THE SETTING AROUND "SS" UNIQUE?"
25140 PRINT "WHAT MAKES IT SO?"
25150 GOTO 6750
25160 PRINT "DOES THE SETTING FOR "SS" REMIND YOU"
25170 PRINT "OF SOMETHING IN YOUR OWN EXPERIENCE? WHY OR WHY NOT?"
25180 GOTO 6750
25190 PRINT "IS THE SETTING OF "SS" GOOD, BAD,"
25200 PRINT "OR INDIFFERENT? EXPLAIN."
25210 GOTO 6750
25220 PRINT "ARE SOME IMPORTANT ASPECTS OF THE SETTING OF"
25230 PRINT "SS" IGNORED BY PEOPLE? WHY OR WHY NOT?"
25240 GOTO 6750
25250 PRINT "WHAT WOULD BE THE IDEAL SETTING FOR"
25260 PRINT "SS"? DESCRIBE."
25270 GOTO 6750
25280 PRINT "WHAT IMPRESSES PEOPLE ABOUT THE SETTING FOR"
25290 PRINT "SS"? DESCRIBE."
25300 GOTO 6750
25310 REM "444 ACT QUESTIONS >>>"
25320 PRINT "WHAT HAPPENS IN "SS"? DESCRIBE."
25330 GOTO 6750
25340 PRINT "WHAT CAUSES "SS"? EXPLAIN."
25350 GOTO 6750
25360 PRINT "DESCRIBE OR LIST WHAT OTHERS MAY NOT KNOW"
25370 PRINT "ABOUT "SS".",
25380 Z(13)=1
25390 GOTO 6750
25400 PRINT "DESCRIBE SOCIETY'S ATTITUDE TOWARD"
25410 PRINT "SS".",
25420 Z(14)=1
25430 GOTO 6750
25440 PRINT "HOW IS "SS" LIKE A RAINBOW, "N13"?
25450 GOTO 6750
25460 PRINT "WHAT ARE THE CONSEQUENCES OF "SS"?
25470 GOTO 6750
25480 PRINT "WHAT AUTHORITIES KNOW ABOUT "SS"?
25490 PRINT "ARE THEY RELIABLE?"
25500 GOTO 6750
25510 PRINT "HOW SHOULD PEOPLE BEHAVE OR ACT TODAY CONSIDERING"
25520 PRINT "SS"?
25530 GOTO 6750
25540 PRINT "DESCRIBE THE INHERENT CRISIS IN "SS"?
25550 PRINT "IN OTHER WORDS, WHAT IS THE MAIN PROBLEM?"
25560 GOTO 6750
25570 PRINT "DESCRIBE HOW "SS" IS A CUSTOM OR"
25580 PRINT "A HABIT OF THINKING."
25590 GOTO 6750
25600 REM "444 AGENT QUESTIONS >>>"
25610 PRINT "WHO IS INVOLVED WITH "SS"?
25620 PRINT "HOW INVOLVED? EXPLAIN."
25630 GOTO 6750
25640 PRINT "HOW ARE PEOPLE CONSCIOUSLY OR UNCONSCIOUSLY INVOLVED"
25650 PRINT "WITH "SS"?
25660 GOTO 6750
25670 PRINT "DESCRIBE THE FEELINGS OF THOSE PEOPLE WHO ARE INVOLVED"
25680 PRINT "WITH "SS". WHAT"
25690 PRINT "SENSIBILITIES DO THEY SHARE?"

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25728 GOTO 6750
25710 PRINT "WHAT AUDIENCE WOULD MOST APPRECIATE KNOWING MORE?"
25720 PRINT "ABOUT 'SS'?"
25730 GOTO 6750
25740 PRINT "WHO ESPECIALLY THINKS ABOUT 'SS'?"
25750 PRINT "WHY? EXPLAIN."
25760 Z(25)=1
25770 GOTO 6750
25780 PRINT "WHO ESPECIALLY CARES ABOUT 'SS'?"
25790 PRINT "EXPLAIN THEIR REASONS."
25800 Z(26)=1
25810 GOTO 6750
25820 PRINT "ARE THE PEOPLE INVOLVED WITH 'SS'"
25830 PRINT "FOR CHANGE OR NOT? EXPLAIN."
25840 GOTO 6750
25850 PRINT "WHAT ATTITUDES DO PEOPLE HAVE TOWARD?"
25860 PRINT "SS"? EXPLAIN."
25870 GOTO 6750
25880 PRINT "DO THE PEOPLE INVOLVED WITH 'SS'"
25890 PRINT "AGREE? EXPLAIN ANY SIGNIFICANT DIFFERENCES."
25900 GOTO 6750
25910 PRINT "MAKE A SHORT LIST OF POINTS OF VIEW ABOUT?"
25920 PRINT "SS", "PRO? CON? INDIFFERENT? IGNORANT?"
25930 GOTO 6750
25940 REM "<<< AGENCY QUESTIONS >>>"
25950 PRINT "DESCRIBE THE PROCESSES USED IN 'SS'."
25960 PRINT "YOU MAY WANT ME TO EXPLAIN, IF SO, TYPE 'EXPLAIN!'"
25970 PRINT "(REMEMBER THE EXCLAMATION POINT!!!)"
25980 GOTO 6750
25990 PRINT "COMPLETE! IF THE ENDS OF 'SS'"
26000 PRINT "ARE _____, THE MEANS ARE _____."
26010 GOTO 6750
26020 PRINT "HOW IS 'SS' LIKE MERCURY?"
26030 PRINT "IN A THERMOMETER? EXPLAIN."
26040 GOTO 6750
26050 PRINT "WHAT PROPS OR DEVICES ARE USED IN?"
26060 PRINT "SS"? DESCRIBE."
26070 GOTO 6750
26080 PRINT "WHAT PSYCHOLOGICAL OR HISTORICAL CAUSES HELP?"
26090 PRINT "CREATE 'SS'? HOW SO?"
26100 GOTO 6750
26110 PRINT "WHAT ECONOMIC OR POLITICAL CAUSES HELP CREATE?"
26120 PRINT "SS"? DESCRIBE."
26130 GOTO 6750
26140 PRINT "WHAT CULTURAL OR SOCIOLOGICAL CAUSES HELP?"
26150 PRINT "CREATE 'SS'? ELABORATE."
26160 Z(37)=1
26170 GOTO 6750
26180 PRINT "HOW CAN EDUCATION BE AN IMPORTANT TOOL IN?"
26190 PRINT "SS"? EXPLAIN."
26200 Z(38)=1
26210 GOTO 6750
26220 PRINT "HOW DOES MONEY AFFECT 'SS'?"
26230 GOTO 6750
26240 PRINT "WHAT TOOLS, WEAPONS, INSTRUMENTS DO YOU NEED TO CHANGE?"
26250 PRINT "ATTITUDES ABOUT 'SS'? DESCRIBE."
26260 GOTO 6750
26270 REM "<<< PURPOSE QUESTIONS >>>"
26280 PRINT "WHAT PURPOSES DOES 'SS' HAVE?"

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26290 GOTO 6750
26300 PRINT "WHAT IS THE ULTIMATE GOAL OF 'SS'?"
26310 GOTO 6750
26320 PRINT "HOW HAVE THE PURPOSES OF 'SS' BEEN"
26330 PRINT "CHANGED? DESCRIBE,"
26340 GOTO 6750
26350 PRINT "DOES EVERYONE AGREE THAT 'SS' HAS"
26360 PRINT "THE SAME PURPOSE? EXPLAIN ANY DIFFERENCES,"
26370 GOTO 6750
26380 PRINT "WHAT PREDICTIONS CAN YOU MAKE ABOUT"
26390 PRINT "SS"? ELABORATE,"
26400 GOTO 6750
26410 PRINT "HOW IS THE PURPOSE OF 'SS"
26420 PRINT "LIKE A BEGINNING. I'LL EXPLAIN IF YOU TYPE 'EXPLAIN!'"
26430 GOTO 6750
26440 PRINT "HOW IS THE PURPOSE OF 'SS' PART"
26450 PRINT "OF A LARGER PURPOSE? DESCRIBE THIS LARGER PURPOSE,"
26460 GOTO 6750
26470 PRINT "WHAT REASONS CAN YOU LIST FOR THE EXISTENCE"
26480 PRINT "OF 'SS'?"
26490 GOTO 6750
26500 PRINT "WHAT SOLUTIONS COULD YOU RECOMMEND FOR ANY PROBLEMS"
26510 PRINT "CAUSED BY 'SS'?"
26520 Z(49)=1
26530 GOTO 6750
26540 PRINT "WHAT'S SO SIGNIFICANT ABOUT 'SS'?"
26550 PRINT "IN OTHER WORDS, 'SO WHAT?'"
26560 Z(50)=1
26570 GOTO 6750
26580 REM <<< KEYWORD SUBROUTINE >>>
26590 INPUT IS
26600 IF IS="" THEN 6590
26610 K=1
26620 K=1
26630 I=2
26640 L=LEN(JS)
26650 Y=INSTR(I,JS," ")
26660 T1=MOD(J1,I,Y=1)
26670 Y1=INSTR(Y,IS,T1)
26680 IF Y1<>0 THEN 6710
26690 K=2
26700 RETURN
26710 I=Y+1
26720 K=Y+1
26730 IF Y<L THEN 6650
26740 RETURN
26750 REM <<< SIGNAL REMARKS & SEMANTIC STABS FOR BRANCHING >>>
26760 PRINT
26770 PRINT
26780 JS="CONTINUE;"
26790 GOSUB 6590
26800 IF K=1 THEN 6680
26810 IF IS="" THEN 6682
26820 JS="STOP;"
26830 GOSUB 6600
26840 IF K=1 THEN 12040
26850 IF IS="" THEN 6620
26860 JS="REPEAT;"
26870 GOSUB 6630

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26870 IF K1=1 THEN 9227
26880 JS="DIRECTIONS!"
26890 GOSUB 6670
26900 D=1
26910 IF K1=1 THEN 680
26920 JS="HOW?"
26930 GOSUB 6680
26940 IF K1=1 THEN 8640
26950 JS="WHY?"
26960 GOSUB 6680
26970 IF K1=1 THEN 8750
26980 JS="43"
26990 GOSUB 6680
27000 IF K1=1 THEN 8590
27010 JS="EXPLAIN!"
27020 GOSUB 6680
27030 IF K1=1 THEN 9360
27040 JS="DO NOT UNDERST."
27050 GOSUB 6680
27060 IF K1=1 THEN 9360
27070 JS="DO NOT KNOW"
27080 GOSUB 6680
27090 IF K1=1 THEN 9360
27100 JS="CHANGE!"
27110 GOSUB 6680
27120 IF K1=1 THEN 8790
27130 JS="WHAT?"
27140 GOSUB 6680
27150 IF K1=1 THEN 9360
27160 JS="MEAN?"
27170 GOSUB 6680
27180 IF K1=1 THEN 9360
27190 JS="OR?"
27200 GOSUB 6680
27210 IF K1=1 THEN 8880
27220 JS="CAN I?"
27230 GOSUB 6680
27240 IF K1=1 THEN 8920
27250 JS="IS IT?"
27260 GOSUB 6680
27270 IF K1=1 THEN 8920
27280 JS="BECAUSE"
27290 GOSUB 6680
27300 IF K1=1 THEN 8960
27310 JS="SCENE!"
27320 GOSUB 6680
27330 IF K1=1 THEN 4170
27340 JS="ACT!"
27350 GOSUB 6680
27360 IF K1=1 THEN 4310
27370 JS="AGENT!"
27380 GOSUB 6680
27390 IF K1=1 THEN 4460
27400 JS="AGENCY!"
27410 GOSUB 6680
27420 IF K1=1 THEN 4610
27430 JS="PURPOSE!"
27440 GOSUB 6680
27450 IF K1=1 THEN 4760

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37460 JS="?"
37470 GOSUB 6600
37480 IF K1=1 THEN 8990
37490 IF L4=1 THEN 8020
37495 IF Q6=0 THEN 7640 'PREVENTS SHORT RESPONSE TO && COMMAND
37500 IF LEN(I3)=10 THEN 9890
37510 A=LEN(I3) 'CHECKS LENGTH OF INDIVIDUAL WORDS
37520 FOR X=1 TO A-1
37530 IF MID$(I3,X,1)=" " THEN 7570
37540 X=X+1
37550 IF X>15 THEN 7600
37560 GOTO 7580
37570 X=0
37580 NEXT X
37590 GOTO 7620
37600 Y=0
37610 GOTO 8490
37620 X=0
37630 REM <<< EXPLORATION BRANCHING AND FEEDBACK >>>
37640 PRINT
37650 PRINT
37660 F1=INT(4*RND+1)
37670 F2=INT(5*RND+1)
37680 E=E+1
37690 IF E>1 THEN 7790
37700 ON F1 GOTO 7710,7730,7750,7770
37710 PRINT "GOOD, "N13", ADD TO YOUR RESPONSE NOW,"
37720 GOTO 6760
37730 PRINT "FINE, "N13", WRITE SOME MORE,"
37740 GOTO 6760
37750 PRINT "THAT'S THE IDEA, "N13", GIVE ME SOME MORE INFO NOW,"
37760 GOTO 6760
37770 PRINT "BY GEORGE, "N13", GOOD ONE, WRITE A LITTLE MORE PLEASE."
37780 GOTO 6760
37790 ON F2 GOTO 7800,7820,7840,7860,7880
37800 PRINT "SUPER, "N13"!"
37810 GOTO 7890
37820 PRINT "OUTSTANDING, "N13"!"
37830 GOTO 7890
37840 PRINT "FANTASTIC, "N13"!"
37850 GOTO 7890
37860 PRINT "TERRIFIC, "N13"!"
37870 GOTO 7890
37880 PRINT "GREAT, "N13"!"
37890 PRINT
37900 E3=E3+1 'E3=COUNT FOR EXPLORED QUESTIONS
37910 PRINT, "ANYTHING ELSE?"
37920 IF E3>2 THEN 7970
37930 PRINT, "(YOU CAN ADD MORE INFO, ASK A"
37940 PRINT, "QUESTION, OR GIVE A COMMAND --"
37950 PRINT, "WHATEVER YOU WISH.)"
37960 PRINT
37970 JS=">YE="
37980 GOSUB 6590
37990 IF K1=1 THEN 8650
8600 L4=1
8610 GOTO 6810
8620 PRINT
8630 PRINT, "OKAY."
8631 S9=A9+G9+Y9+P9+0 'PREVENTS REPEATED PURPOSE SET. AFTER HEURIST

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IC CHOICE
28040 PRINT
28050 IF C=103 THEN 9140
28060 IF C=108 THEN 9140
28070 IF C=106 THEN 3020
28080 IF C=112 THEN 3340
28090 PRINT
28100 PRINT
28110 M8=INT(10*RND+1)
28120 ON M8 GOTO 8130,8150,8170,8190,8210,8230,8250,8270,8290,8310
28130 PRINT "(USE GOOD, STRONG, ACTION VERBS WHEN YOU CAN.)"
28140 GOTO 8320
28150 PRINT "(SEE IF YOU CAN USE THE WORD 'BECAUSE' IN YOUR NEXT ANSWER.)"
28160 GOTO 8320
28170 PRINT "(I'LL EXPLAIN A QUESTION IF YOU TYPE 'EXPLAIN!')"
28180 GOTO 8320
28190 PRINT "(THE MORE SENTENCES YOU USE THE BETTER SESSION WE'LL HAVE.)"
28200 GOTO 8320
28210 PRINT "(IF YOU DON'T UNDERSTAND A QUESTION, JUST SAY SO. I'LL HELP.)"
28220 GOTO 8320
28230 PRINT "(AFTER THE NEXT QUESTION, TYPE 'WHAT?' AND I'LL DO MY THING.)"
28240 GOTO 8320
28250 PRINT "(REASONS ARE IMPORTANT TOO -- THE MORE, THE BETTER.)"
28260 GOTO 8320
28270 PRINT "(HEY, I'M ENJOYING THIS. YOU'RE QUITE BRIGHT!)"
28280 GOTO 8320
28290 PRINT "(REMEMBER COMMANDS NEED EXCLAMATION MARKS!! LIKE 'REPEAT!'. ....)"
28300 GOTO 8320
28310 PRINT "(I'LL TRY TO ANSWER YOUR QUESTIONS. DON'T FORGET.)"
28320 PRINT
28330 PRINT
28340 PRINT
28350 PRINT
28360 C8=INT(5*RND+1)
28370 ON C8 GOTO 8380,8400,8420,8440,8460
28380 PRINT "WE'RE MOVING RIGHT ALONG. HERE IS QUESTION'C+1'."
28390 GOTO 8470
28400 PRINT "AND HERE COMES A REALLY INTERESTING QUESTION--NUMBER'C+1'."
28410 GOTO 8470
28420 PRINT "QUESTION'C+1'--ONE OF MY ALL-TIME FAVORITES COMING UP."
28430 GOTO 8470
28440 PRINT "HERE IS QUESTION'C+1', 'N13'."
28450 GOTO 8470
28460 PRINT "LET'S SEE, HOW ABOUT QUESTION'C+1'NEXT. HERE YOU ARE."
28470 PRINT
28480 GOTO 3820
28482 PRINT "RESPONDS TO IS=NO, AFTER INVENTION PROMPTER"
28483 PRINT "YOU COULD TELL ME 'WHY NOT', BUT YOU"
28484 PRINT "MAY JUST WISH TO CONTINUE, IF SO, TYPE 'CONTINUE!'"
28485 PRINT "(DON'T FORGET THE EXCLAMATION POINT!!)"
28486 GOTO 8760
28490 PRINT "RESPONSE TO 'GARBAGE' OR JARGON"
28500 PRINT "HEY, 'N13', WHAT LANGUAGE!!!!!!"

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28513 PRINT,"TRY IT AGAIN. I CANNOT UNDERSTAND WHAT YOU'RE SAYING."
28520 PRINT
28530 PRINT,"(YOU MAY HAVE RUN SOME WORDS TOGETHER. IF SO,"
28540 PRINT,"JUST CONTINUE EXPLORING. I'LL REPEAT THIS"
28550 PRINT,"QUESTION IF YOU TYPE 'REPEAT!' I'LL GO ON IF YOU"
28560 PRINT,"TYPE 'CONTINUE!' IF YOU HAVE MORE TO WRITE HERE, GO"
28570 PRINT,"AHEAD,)"
28580 GOTO 6760
28590 PRINT "ANSWERS THE COMMAND *84*
28600 PRINT "GO ON, *N13*,"
28605 28*06+1
28610 GOTO 6760
28620 PRINT "ANSWERS THE SINGLE QUESTION MARK (IS=?)"
28630 PRINT "GO AHEAD, *N13*, ASK. I'LL DO THE BEST I CAN,"
28640 GOTO 6760
28650 PRINT "ANSWERS A *YE* TO ANYTHING ELSE?
28660 PRINT "WHAT?"
28670 GOTO 6760
28680 PRINT "ANSWERS THE QUESTION *HOW*?"
28690 PRINT "I COULD SAY THAT THAT'S FOR ME TO KNOW AND FOR YOU TO FIG
D OUT."
28700 PRINT
28710 PRINT "SERIOUSLY, I CANNOT PRETEND TO KNOW 'HOW', BUT YOU"
28720 PRINT "SHOULD KEEP EXPLORING FOR AN ANSWER."
28730 PRINT
28740 GOTO 6760
28750 PRINT "ANSWERS THE QUESTION *WHY*?"
28760 PRINT "WELL, WHY NOT? REMEMBER WE ARE EXPLORING, BRAINSTORMING!"
"
28770 PRINT
28780 GOTO 6760
28790 48*06+1 "ANSWERS *CHANGE!* COMMAND
28800 59*49*09*Y9*P9*0
28810 IF 48>1 THEN 2850
28820 PRINT
28830 PRINT "GOOD FOR YOU, *N13*. NOT EVERY WRITER NARROWS OR"
28840 PRINT "CHANGES HIS OR HER TOPIC THIS EARLY IN THE INVENTION PROC
ESS."
28850 PRINT
28860 PRINT "PLEASE TYPE IN YOUR NEW SUBJECT:"
28870 GOTO 2160
28880 PRINT "ANSWERS STATEMENT * OR *?"
28890 PRINT "WHATEVER YOU THINK BEST, *N13*. YOU DECIDE."
28900 PRINT
28910 GOTO 6760
28920 PRINT "ANSWERS QUESTION *CAN I*?"
28930 PRINT "YES, OF COURSE."
28940 PRINT
28950 GOTO 6760
28960 PRINT "RESPONDS TO SUBORDINATE *BECAUSE*
28970 PRINT,"I LIKE YOUR REASONING."
28980 GOTO 7460
28990 PRINT "RESPONDS TO *?"
29000 74*06+1
29010 IF 28*2 THEN 9060
29020 IF 28>2 THEN 10530
29030 PRINT "ANOTHER INTERESTING QUESTION. I'D SAY 'YES'."
29040 PRINT
29050 GOTO 12590
29060 PRINT "YES, THAT SEEMS OKAY."

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09070 PRINT
09080 GOTO 12590
09090 PRINT "RESPONDS TO SHORT ANSWERS
09100 PRINT,"AHMM, SHORT AND SWEET, NOW TELL ME"
09110 PRINT "WHY? IN OTHER WORDS, ELABORATE A LITTLE,"
09120 PRINT
09130 GOTO 6760
09140 PRINT "AUTO NARROW/CHANGE LOOP
09150 PRINT "DO YOU WISH TO CHANGE OR NARROW YOUR SUBJECT?"
09160 PRINT,"(YES OR NO?)"
09170 JS="YES"
09180 GOSUB 6590
09190 IF K1=1 THEN 6790
09200 PRINT
09210 GOTO 8360
09220 PRINT "RESPONDS TO REPEAT:"
09230 IF 240 THEN 9270
09240 IF 3901 THEN 4950 REPRINT SELECTED SCENE QUESTION
09250 IF C46 THEN 3890 REPRINT ONE OF FIRST RANDOM FIVE QUESTIONS
09260 GOTO 4950 REPRINT RANDOM SCENE QUESTION
09270 IF A901 THEN 4960
09280 IF G901 THEN 4970
09290 IF V901 THEN 4980
09300 IF P901 THEN 4990
09310 IF 201000 THEN 4960
09320 IF 202000 THEN 4970
09330 IF 203200 THEN 4980
09340 IF 204000 THEN 4990
09350 REM <<< CLARIFICATION ARRAY AND EXAMPLE SEQUENCE >>>
09360 PRINT
09370 IF X(R)=1 THEN 12610
09380 X(R)=1
09390 IF C>5 THEN 9500
09400 IF 3901 THEN 9500
09410 IF A901 THEN 9510
09420 IF G901 THEN 9520
09430 IF V901 THEN 9530
09440 IF P901 THEN 9540
09450 IF R43 THEN 9630
09460 IF R45 THEN 9640
09470 IF R47 THEN 9650
09480 IF R49 THEN 9660
09490 IF R411 THEN 9670
09500 IF R411 THEN 9630
09510 IF R421 THEN 9550
09520 IF R431 THEN 9570
09530 IF R441 THEN 9590
09540 IF R451 THEN 9610
09550 R1=R1-10
09560 GOTO 9640
09570 R1=R1-20
09580 GOTO 9650
09590 R1=R1-30
09600 GOTO 9660
09610 R1=R1-40
09620 GOTO 9670
09630 ON R1 GOTO 9680,9750,9840,9870,9910,9940,9980,10020,10070,10110
09640 ON R1 GOTO 10150,10190,10230,10330,10410,10460,10510,10570,10620
,10670
09650 ON R1 GOTO 10710,10750,10810,10850,10920,11010,11110,11160,11290

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1125d
29440 ON 41 GOTO 11300,11350,11390,11450,11500,11570,11650,11700,11900
11400
29470 ON 41 GOTO 12000,12060,12080,12120,12180,12220,12270,12300,12340
12450
29480 PRINT "THIS SCENE QUESTION SHOULD HELP YOU VISUALIZE SPECIFIC"
29490 PRINT "SETTINGS FOR 'SS'."
29720 PRINT
29730 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT HUMAN RIGHTS,"
29740 PRINT "I MIGHT WISH TO MENTION THE VARIOUS COUNTRIES"
29750 PRINT "WHERE HUMAN RIGHTS IS A SIGNIFICANT ISSUE."
29760 GOTO 12520
29770 PRINT "I'M THINKING ABOUT SPECIFIC LOCATIONS FOR"
29780 PRINT "SS", "THESE LOCATIONS MAY BE"
29790 PRINT "PHYSICAL OR MENTAL, NATURAL OR UNNATURAL,"
29800 PRINT
29810 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT THE ARMS"
29820 PRINT "RACE, IT WOULD BE INTERESTING TO CONSIDER THE DIPLOMATIC"
29830 PRINT "LOCATIONS, THE STRATEGIC MILITARY LOCATIONS,"
29840 PRINT "OR EVEN THE HISTORICAL LOCATIONS."
29850 GOTO 12550
29860 PRINT "BY 'BACKGROUND', I MEAN THOSE DETAILS, CIRCUMSTANCES,"
29870 PRINT "ACTIVITIES, OR SPACE SURROUNDING 'SS',"
29880 GOTO 12580
29890 PRINT "SOMETIMES A SPECIFIC FEATURE OF THE SETTING HAS"
29900 PRINT "MORE IMPORTANCE--THAT IS, IT SEEMS TO STAND OUT."
29910 PRINT "IS THIS TRUE FOR 'SS'? EXPLAIN."
29920 GOTO 12520
29930 PRINT "'UNIQUE' MEANS 'ONE OF A KIND', 'SPECIAL'. IF YOUR TOPIC"
29940 PRINT "DOES NOT SEEM UNIQUE, THEN DESCRIBE HOW IT CONFORMS."
29950 GOTO 12550
29960 PRINT "WHEN WRITING A PAPER, DON'T NEGLECT TO EXPLORE YOUR OWN"
29970 PRINT "EXPERIENCES. YOU MAY DISCOVER SOMETHING INTERESTING"
29980 PRINT "ENOUGH FOR YOUR INTRODUCTION. ANY MEMORIES, 'MIS'?"
29990 GOTO 12580
30000 PRINT "SETTINGS ARE USUALLY INDIFFERENT FOR MOST SUBJECTS, BUT"
30010 PRINT "SOMETIMES THE 'PLACES' OF 'SS'"
30020 PRINT "SEEM UNUSUALLY APPROPRIATE. WHY IS THAT?"
30030 GOTO 12520
30040 PRINT "WHAT PARTICULARS OF 'SS' ARE THOUGHT"
30050 PRINT "TO BE LESS IMPORTANT. DO YOU AGREE? OFFER AN ANSWER"
30060 PRINT "TO THIS QUESTION CAN PRODUCE A VERY PERSUASIVE THESIS."
30070 PRINT "FOR MANY PEOPLE MAY BE OVERLOOKING SOMETHING SIGNIFICANT."
30080
30090 GOTO 12550
30100 PRINT "SOMETIME THE CONDITIONS OR THE SETTINGS FOR THE ACTIONS"
30110 PRINT "OF A SUBJECT COULD BE IMPROVED. IS THIS THE CASE"
30120 PRINT "WITH 'SS'? WHY OR WHY NOT?"
30130 GOTO 12580
30140 PRINT "IS THERE ANYTHING ABOUT THE SETTING OR SURROUNDINGS OF"
30150 PRINT "SS" THAT DELIGHTS, MOTIVATES,"
30160 PRINT "PUZZLES, PERSUADES, OR INFLUENCES SOMEONE IN ANY WAY?"
30170 GOTO 12520
30180 PRINT "AN IMPORTANT QUESTION, FOR IF YOU KNOW WHAT HAPPENS"
30190 PRINT "IN AND AROUND 'SS', YOU'LL"
30200 PRINT "PROBABLY HAVE A LOT TO SAY."
30210 GOTO 12550
30220 PRINT "WHAT FORCES HELP CREATE 'SS'?"

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12200 PRINT "THIS IS NOT A SIMPLE MATTER--I KNOW THAT--BUT THERE ARE"
12210 PRINT "MANY INSIGHTS IN A CAREFUL EXPLORATION OF CAUSES,"
12220 GOTO 12500
12230 PRINT "NEW INFORMATION OR INFORMATION WITH 'SURPRISE VALUE' CAN"
12240 PRINT "MAKE YOUR PAPER INTERESTING. SO THEN NAME SOMETHING"
12250 PRINT "NEW OR SURPRISING ABOUT 'SS',"
12260 PRINT
12270 PRINT "FOR EXAMPLE, IF I WERE WRITING A PAPER ABOUT UFO'S,"
12280 PRINT "I WOULD TRY TO FIND OR REMEMBER AN INTERESTING STORY"
12290 PRINT "ABOUT THE UFO EXPERIENCE. YOU KNOW, SOMETHING"
12300 PRINT "LIKE A SPECIFIC PERSON'S TRIP TO VENUS."
12310 I(13)=1
12320 GOTO 12520
12330 PRINT "BY 'SOCIETY'S ATTITUDE' I MEAN WHAT DO"
12340 PRINT "PEOPLE IN GENERAL THINK ABOUT 'SS',"
12350 PRINT
12360 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT A CONTROVERSIAL"
12370 PRINT "TOPIC (SAY 'ABORTION'), I WOULD WANT TO WRITE SOMETHING"
12380 PRINT "ABOUT PEOPLE'S VARIED VIEWPOINTS."
12390 I(14)=1
12400 GOTO 12550
12410 PRINT "ANALOGIES ARE OFTEN FRUITFUL WAYS TO THINK ABOUT A TOPIC."
12420 PRINT "A RAINBOW CAN BE A SYMBOL OF HOPE, A SHORT-LIVED PHENOMENON"
12430 PRINT "OR SOMETHING WHICH DEMONSTRATES A RANGE OF COLORS. IS"
12440 PRINT "SS" LIKE A RAINBOW?"
12450 GOTO 12500
12460 PRINT "AN IMPORTANT CONSIDERATION WHEN WRITING ABOUT THE ACTIONS"
12470 PRINT "OF"
12480 PRINT "A SUBJECT IS CLEARLY RECOGNIZING THE CONSEQUENCES OF SUCH"
12490 PRINT "ACTIONS. IN OTHER WORDS, WHAT HAPPENS AFTER OR AS A"
12500 PRINT "RESULT OF 'SS'?"
12510 GOTO 12520
12520 PRINT "THERE ARE TWO PARTS TO THIS QUESTION. FIRST, WHO ARE THE"
12530 PRINT "EXPERTS? SECOND, ARE THESE EXPERTS (SO-CALLED) TRUSTWORTHY?"
12540 IF 2004 THEN 12610
12550 PRINT "THIS IS THE KIND OF INFORMATION THAT CAN BE DISCOVERED"
12560 PRINT "DURING THE RESEARCH PHASE. KEEP THIS QUESTION IN MIND,"
12570 GOTO 12550
12580 PRINT "OFTEN A SUBJECT CAN OR SHOULD AFFECT HUMAN BEHAVIOR. THE"
12590 PRINT "QUESTION ASKS WHAT SHOULD WE DO. SHOULD WE FIGHT?"
12600 PRINT "SHOULD WE CHANGE? SHOULD WE BE QUIET ABOUT IT? SHOULD"
12610 PRINT "WE TAKE STEPS TO UNDERSTAND?"
12620 GOTO 12500
12630 PRINT "ANOTHER WAY TO SAY 'INHERENT CRISIS' IS 'BASIC PROBLEM'?"
12640 PRINT "GENERAL DILEMMA". YOU CAN BEGIN BY DISCOVERING THE TWO"
12650 PRINT "OR MORE PARTS OF 'SS' WHICH"
12660 PRINT "CREATE THE PROBLEM. THIS ANSWER IS IMPORTANT!"
12670 GOTO 12520
12680 PRINT "BY 'CUSTOM OR HABIT OF THINKING', I MEAN FOR"
12690 PRINT "YOU TO EXPLORE THOSE MATTERS WHICH TEND TO KEEP"
12700 PRINT "SS" FROM CHANGING."
12710 GOTO 12550

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10710 PRINT "BASICALLY, 'THIS', I WANT YOU TO NAME A FEW PEOPLE"
10720 PRINT "WHO CARE ABOUT 'SS', THEN I WANT"
10730 PRINT "YOU TO WRITE A FEW WORDS ABOUT THEIR INTEREST."
10740 GOTO 12580
10750 PRINT "THIS IS AN INTERESTING QUESTION SINCE MANY PEOPLE CAN"
10760 PRINT "BE UNAWARE OF HOW 'SS' AFFECTS"
10770 PRINT "THEM. MAYBE ANOTHER WAY TO PHRASE THIS QUESTION WOULD"
10780 PRINT "BE: ARE PEOPLE ACTIVELY OR PASSIVELY INVOLVED WITH"
10790 PRINT "SS?"
10800 GOTO 12520
10810 PRINT "HOW DO PEOPLE FEEL ABOUT 'SS'?"
10820 PRINT "DISTRESSED? HURT? HAPPY? HEAVY? STRONG? INDIFFERENT?"
10830 PRINT "PUZZLED? AMAZED? FRIGHTENED? ENCOURAGED? ETC."
10840 GOTO 12550
10850 PRINT "WHAT GROUP OF PEOPLE ARE MOST LIKELY TO READ ABOUT"
10860 PRINT "SS IN A NEWSPAPER?"
10870 PRINT
10880 PRINT "THERE'S ANOTHER WAY TO LOOK AT IT: IF YOU WERE NOT"
10890 PRINT "WRITING THIS PAPER FOR CLASS, WHO WOULD YOU"
10900 PRINT "BE WRITING IT FOR? (NO ONE DOES NOT COUNT!!)"
10910 GOTO 12580
10920 PRINT "WHO ARE THE THINKERS? WHY ARE THEY THINKING ABOUT"
10930 PRINT "SS? ARE THEY"
10940 PRINT "TAKING ACTION? EXPLAIN WHY OR WHY NOT."
10950 PRINT
10960 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT THE DISCOTHEQUE"
10970 PRINT "PAO, I MIGHT WANT TO EXPLORE WHAT THOSE IN THE"
10980 PRINT "NIGHTCLUB BUSINESS THINK ABOUT THE 'FEVER'."
10990 X(25)=1
11000 GOTO 12520
11010 PRINT "THIS IS THE FAMILIAR 'WHO CARES' QUESTION, BUT HERE THE"
11020 PRINT "ANSWER HAS TO BE SOMEONE, IF YOU CAN, EXPLAIN WHY"
11030 PRINT "THESE PEOPLE CARE, WHAT IS AT STAKE FOR THEM?"
11040 PRINT
11050 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT ENERGY RESOURCES."
11060 PRINT "I WOULD SAY THAT THE PRESIDENT CARES BECAUSE AMERICA'S"
11070 PRINT "NATURAL RESOURCES ARE DIMINISHING, ETC. I MIGHT WANT"
11080 PRINT "TO FOLLOW THIS MATTER UP BY HEADING HIS ENERGY PROPOSALS."
11090
11090 X(26)=1
11100 GOTO 12550
11110 PRINT "TO CHANGE OR NOT TO CHANGE, THAT IS THE QUESTION."
11120 PRINT
11130 PRINT "DESCRIBE THE PEOPLE AND THEIR RELATIVE POSITIONS REGARDING"
11140 PRINT "CHANGE AND 'SS'."
11150 GOTO 12540
11160 PRINT "NOT ALL PEOPLE SHARE THE SAME OPINIONS ABOUT"
11170 PRINT "SS. MENTION THE DIFFERENCES"
11180 PRINT "OR SHADES OF DIFFERENCES WITH REGARD TO ATTITUDE."
11190 GOTO 12520
11200 PRINT "THIS QUESTION HAS MORE TO DO WITH THE FACTS SURROUNDING"
11210 PRINT "SS THAN THE ATTITUDES."
11220 PRINT "ARE THE FACTS OF THE MATTER AGREED UPON?"
11230 PRINT "AMONG ALL PARTIES?"
11240 GOTO 12550
11250 PRINT "A GOOD ANSWER TO THIS QUESTION CAN TRULY HELP YOU ORGANIZ"
11260 PRINT "YOUR PAPER. TRY TO BALANCE THE LIST BY MENTIONING"
11270 PRINT "THE OPPOSITE PERSPECTIVE AS WELL. INCLUDE"

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11280 PRINT "A PERSON'S NAME WITH EACH POINT OF VIEW IF YOU CAN."
11290 GOTO 12580
11300 PRINT "'PROCESSES' IS A CURIOUS WAY TO PUT IT, I SUPPOSE."
11310 PRINT "I WOULD LIKE YOU TO DESCRIBE HOW YOUR SUBJECT,"
11320 PRINT "SS", "WORKS. WHAT INSTRUMENTS,"
11330 PRINT "TOOLS, OR METHODS COME TO MIND?"
11340 GOTO 12520
11350 PRINT "YOU HAVE TO THINK ABOUT TWO THINGS HERE: THE FINAL"
11360 PRINT "PRODUCT OF 'SS' AND HOW"
11370 PRINT "THIS PRODUCT CAME ABOUT. THINK ABOUT IT, 'N18'."
11380 GOTO 12550
11390 PRINT "THIS ANALOGY IS ONE OF MANY I COULD HAVE ASKED YOU."
11400 PRINT "ONE WAY TO LOOK AT IT WOULD BE TO DESCRIBE HOW"
11410 PRINT "SS" REACTS TO AND"
11420 PRINT "MEASURES ITS SURROUNDINGS. YOU CAN PROBABLY THINK"
11430 PRINT "OF ANOTHER INTERPRETATION AS WELL."
11440 GOTO 12580
11450 PRINT "UNDERSTANDING THE WORKINGS OF 'SS"
11460 PRINT "WILL HELP YOU WRITE, BY 'PROPS' I"
11470 PRINT "MEAN INSTRUMENTS ASSOCIATED WITH YOUR SUBJECT. I SUSPECT

11480 PRINT "THIS SAME DEFINITION HOLDS FOR 'DEVICES'."
11490 GOTO 12520
11500 PRINT "THIS IS A TOUGH QUESTION, AND YOU MAY WANT TO DO"
11510 PRINT "SOME RESEARCH ABOUT IT. ESSENTIALLY, YOU SHOULD"
11520 PRINT "BE AWARE OF CAUSE/EFFECT RELATIONSHIPS. BY 'PSYCHOLOGICA
"
11530 PRINT "I MEAN THOSE THINGS WHICH GO ON INSIDE"
11540 PRINT "THE HEAD. BY 'HISTORICAL' I MEAN THOSE EVENTS AND"
11550 PRINT "CIRCUMSTANCES WHICH SHAPED YOUR TOPIC."
11560 GOTO 12550
11570 PRINT "THIS IS A HUGE QUESTION, AND YOU WILL NOT HAVE TIME TO"
11580 PRINT "EXPLORE IT FULLY HERE TODAY. ESSENTIALLY, YOU SHOULD"
11590 PRINT "BE AWARE OF THE CAUSE/EFFECT RELATIONSHIPS. BY 'ECONOMIC
"
11600 PRINT "I MEAN THOSE MONEY MATTERS WHICH HAVE INFLUENCED YOUR"
11610 PRINT "TOPIC. BY 'POLITICAL' I MEAN THOSE DECISIONS OF"
11620 PRINT "THE PEOPLE, BY THE PEOPLE, AND FOR THE PEOPLE WHICH"
11630 PRINT "HAVE AFFECTED 'SS'."
11640 GOTO 12580
11650 PRINT "THIS IS ABOUT THE MOST DIFFICULT QUESTION IN THIS"
11660 PRINT "SEQUENCE, AND OBVIOUSLY YOU WILL NOT HAVE TIME TO ANSWER"
11670 PRINT "IT AT GREAT LENGTH. MAINLY, 'N18', I WANT YOU TO BE"
11680 PRINT "AWARE OF THE CAUSE/EFFECT RELATIONSHIPS. BY 'CULTURAL'"
11690 PRINT "I MEAN THOSE DEEP BELIEFS AND AUTOMATIC BEHAVIORS OF A"
11700 PRINT "NATION OR COMMUNITY OF PEOPLE WHICH AFFECT"
11710 PRINT "SS". BY 'SOCIOLOGICAL' I MEAN"
11720 PRINT "THOSE SPECIFIC NEEDS OF A PARTICULAR GROUP OF PEOPLE."
11730 PRINT
11740 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT SPACE EXPLORATION,"
11750 PRINT "I MIGHT ADDRESS THE NEED FOR MAN TO EXPLORE AND DISCOVER,

11760 PRINT "OR I MIGHT CONSIDER HOW SPACE IS OUR MODERN FRONTIER."
11770 I(37)=1
11780 GOTO 12520
11790 PRINT "WHAT DO WE NEED TO LEARN ABOUT 'SS'?"
11800 PRINT "HOW ARE WE GOING TO BE TAUGHT? WHO IS GOING TO TEACH US?

11810 PRINT

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11420 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT INFLATION, I WOULD"
11430 PRINT "WRITE THAT WE NEED TO LEARN HOW DANGEROUS"
11440 PRINT "INFLATION COULD BE. I WOULD ADD THAT WE ARE NOT LEARNING
"
11450 PRINT "RAPIDLY, AND CONSEQUENTLY ONLY A SEVERE RECESSION WILL"
11460 PRINT "TEACH US ANYTHING IMPORTANT. FINALLY, I WOULD LOCATE"
11470 PRINT "SOME MORE SPECIFIC INFORMATION AT THE LIBRARY."
11480 X(38)=1
11490 GOTO 12550
11500 PRINT "IS MONEY THE ROOT OF ALL EVIL OR THE ONLY HOPE FOR"
11510 PRINT "SS"? IF I GAVE YOU $1,000,000,"
11520 PRINT "HOW WOULD IT AFFECT THE SITUATION? FOR BETTER OR FOR WOR"
11530 SE7"
11540 GOTO 12580
11550 PRINT "ONE OF THE MAJOR 'AGENCY' CONCERNS IS TO STATE"
11560 PRINT "AND DESCRIBE WHATEVER DEVICE/METHOD WILL SIGNIFICANTLY"
11570 PRINT "CHANGE A PERSON'S ATTITUDE ABOUT A SUBJECT. OBVIOUSLY,"
11580 PRINT "A WELL-PUT ANSWER MAY TELL YOU HOW TO WRITE PERSUASIVELY"
11590 PRINT "ABOUT 'SS'."
11600 GOTO 12520
11610 PRINT "THE WORDING MAY SOUND AWKWARD IN THIS QUESTION,"
11620 PRINT "LET'S TRY A SIMPLE ASSOCIATION GAME:"
11630 PRINT,"IF I SAY 'SS"
11640 PRINT,"AND IF I SAY 'PURPOSE'"
11650 PRINT "WHAT DO YOU THINK ABOUT? DESCRIBE OR EXPLAIN."
11660 GOTO 12550
11670 PRINT "I MEAN WHAT WOULD BE THE LAST ACHIEVEMENT?"
11680 GOTO 12580
11690 PRINT "SOMETIMES, 'MIS', PURPOSES OR GOALS CHANGE. HAS"
11700 PRINT "THIS HAPPENED WITH 'SS'?"
11710 PRINT "WHY OR WHY NOT?"
11720 GOTO 12520
11730 PRINT "WHEN THERE IS A DISAGREEMENT ABOUT THE FINAL PURPOSE"
11740 PRINT "OF A PARTICULAR ACTION, USUALLY NOT EVERYONE AGREES"
11750 PRINT "ABOUT THE ULTIMATE PURPOSE, IF THERE ARE DIFFERENCES"
11760 PRINT "ABOUT WHAT SHOULD HAPPEN, DESCRIBE THEM."
11770 PRINT "CERTAINLY, 'SS' IS SUCH A TOPIC,"
11780 GOTO 12550
11790 PRINT "HAVE SOME FUN WITH THIS QUESTION. PRETEND YOU ARE"
11800 PRINT "A FORTUNE-TELLER! WHAT DO YOU PREDICT? WHAT SAY"
11810 PRINT "YOU, GREAT PROPHET OF 'MIS'?"
11820 GOTO 12580
11830 PRINT "EVERYONE AT SOME TIME HAS FELT THAT THE END OF ONE THING"
11840 PRINT "IS JUST THE BEGINNING OF ANOTHER. CERTAINLY, THIS GUY"
11850 PRINT "FEELING IS TRUE OF 'SS'."
11860 PRINT "DO YOU AGREE WITH ME? WHY OR WHY NOT?"
11870 GOTO 12520
11880 PRINT "WHAT'S THE BIG PICTURE, 'MIS'? HOW DOES"
11890 PRINT "SS" FIT INTO THE OVERALL SCHEME?"
11900 GOTO 12550
11910 PRINT "WHY DOES 'SS' DEMAND OUR"
11920 PRINT "ATTENTION IN THIS DAY AND AGE. WHAT REASONS CAN YOU"
11930 PRINT "GIVE FOR THE IMPORTANCE OF YOUR TOPIC?"
11940 GOTO 12580
11950 PRINT "I WAS HOPING YOU WOULD ASK, NEW SOLUTIONS POSE NEW"
11960 PRINT "PROBLEMS--YOU CAN COUNT ON IT! NOW THINK ABOUT HOW"
11970 PRINT "KNOWING MORE ABOUT 'SS"
11980 PRINT "MAY CREATE MORE PROBLEMS. DO YOU AGREE WITH ME?"
11990 PRINT "WHY OR WHY NOT?"

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12390 PRINT
12400 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT POLITICAL CORRUPTION
12410 PRINT "I MIGHT DEVELOP THE IDEA THAT CORRECTING POLITICAL"
12420 PRINT "CORRUPTION MEANS SOLVING MANY LAW ENFORCEMENT PROBLEMS."
12430 X(49)=1
12440 GOTO 12520
12450 PRINT "WHY IS 'SS' SO IMPORTANT?"
12460 PRINT
12470 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT YOUR TOPIC,"
12480 PRINT "SS", THIS WOULD BE THE"
12490 PRINT "FIRST QUESTION I WOULD WANT TO ANSWER,"
12500 X(50)=1
12510 GOTO 12550
12520 PRINT "PROMPTERS AFTER CLARIFICATION"
12530 PRINT "TRY ANSWERING THIS QUESTION NOW,"
12540 GOTO 6760
12550 PRINT
12560 PRINT "WHAT ARE YOU THINKING NOW, 'N13'?"
12570 GOTO 6760
12580 PRINT
12590 PRINT "YOUR TURN, 'N13'."
12600 GOTO 6760
12610 PRINT "SECOND RESPONSE AFTER CLARIFICATION REQUEST"
12620 PRINT "THAT'S ABOUT ALL I CAN ADD AT THE MOMENT, SORRY!"
12630 GOTO 12550
12640 REM <<< CLOSING SEQUENCES >>>
12650 IF C<3 THEN 12960
12660 IF C<7 THEN 12950
12670 PRINT
12680 PRINT
12690 PRINT "YOU EXPLORED 'E3' QUESTIONS IN THESE FEW MINUTES,"
12700 PRINT "BUT YOU ARE NOT FINISHED INVENTING YET,"
12710 PRINT
12720 PRINT "YOU ARE STILL IN THE FIRST STAGES"
12730 PRINT "OF THE CREATIVE PROCESS, THE IDEAS YOU HAVE COME"
12740 PRINT "UP WITH, 'N13', NOW NEED TO SIMMER FOR A LITTLE"
12750 PRINT "TIME."
12760 PRINT
12770 PRINT "I HOPE THAT YOU CAN NOW 'GENERATE' YOUR OWN QUESTIONS"
12780 PRINT "FROM BURKE'S FIVE PERSPECTIVES. DON'T NEGLECT THE"
12790 PRINT "RATIOS AS YOU WRITE YOUR PAPER."
12800 PRINT
12810 PRINT "I HOPE YOUR PAPER ON 'SS"
12820 PRINT "IS TERRIFIC."
12830 PRINT
12840 PRINT "GOOD BYE, 'N13'."
12850 STOP
12860 PRINT
12870 PRINT
12880 PRINT "WHY, 'N13', YOU ARE IN A HURRY TODAY,"
12890 PRINT
12900 PRINT "YOU WILL NEED TO SPEND MORE TIME THINKING ABOUT"
12910 PRINT "SS'."
12920 PRINT
12930 PRINT "SORRY I COULD NOT HELP YOU MORE. BYE."
12940 STOP
12950 PRINT
12960 PRINT
12970 PRINT "YOU ARE DEFINITELY A DEEP THINKER, 'N13'."

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12980 PRINT
12990 PRINT,"YOU WERE ASKED"C"QUESTIONS AND FULLY EXPLORED"
13000 PRINT,E3"OF THEM,"
13010 PRINT
13020 PRINT,"PLEASE COME BACK WHEN YOU CAN STAY LONGER,"
13030 PRINT
13040 PRINT,,"GOOD BYE,"
13050 END
```

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20010 REM <<< INVENTION PROGRAM: TAGMEMIC MATRIX >>>
20020 REM <<< AUTHOR: HUGH BURNS >>>
20030 REM <<< THIS PROGRAM MAY BE USED ONLY WITH AUTHOR'S PERMISSI
74.
20040 REM USE WITHOUT DIRECT PERMISSION VIOLATES COPYRIGHT LAW. >>
>
20050 RANDOMIZE
20060 DIM Z(59)
20070 Z(0)=0
20080 DIM X(59)
20090 X(0)=0
20100 P0=0:P8=0:L4=0:C=0:B=0 "COUNTERS"
20110 PRINT
20120 PRINT
20130 PRINT
20140 PRINT
20150 PRINT
20160 PRINT,"A COMPUTER-ASSISTED INVENTION PROGRAM:"
20170 PRINT,"-----"
20180 PRINT
20190 PRINT,"          THE TAGMEMIC MATRIX"
20200 PRINT,"          -----"
20210 PRINT
20220 PRINT
20230 PRINT
20240 PRINT
20250 PRINT,"HI! WELCOME TO CAI-PROMPTED EXPLORATION,"
20260 PRINT
20270 PRINT "PLEASE TYPE IN YOUR FIRST NAME: ";
20280 INPUT N1$
20290 IF N1$="" THEN 280
20300 PRINT
20310 PRINT "NOW, "N1$", PLEASE TYPE IN YOUR LAST NAME: ";
20320 INPUT N2$
20330 IF N2$="" THEN 320
20340 IF N2$="TEST!" THEN 3850
20350 PRINT
20360 PRINT "THANK YOU, "N1$" "N2$", I HOPE I CAN BE OF SOME"
20370 PRINT "ASSISTANCE TO YOU TODAY. IF WE TAKE EACH OTHER SERIOUSLY
"
20380 PRINT "I KNOW YOU'LL THINK ABOUT YOUR TOPIC AS YOU NEVER HAVE BEFO
RE."
20390 PRINT
20400 PRINT
20410 PRINT,"BEFORE WE BEGIN, "N1$", THERE'S AN OLD"
20420 PRINT "SAYING ABOUT COMPUTER-ASSISTED INSTRUCTION. IT GOES!"
20430 PRINT
20440 PRINT,"GARBAGE IN, GARBAGE OUT!"
20450 PRINT
20460 PRINT "IN OTHER WORDS, YOU AND I MUST COOPERATE SO THAT"
20470 PRINT "YOU CAN GET A GOOD START ON YOUR RESEARCH PAPER."
20480 PRINT
20490 PRINT
20500 PRINT
20510 PRINT,"(PRESS 'RETURN' TO CONTINUE.)";
20520 INPUT A$
20530 PRINT
20540 PRINT
20550 PRINT
20560 PRINT "WOULD YOU LIKE TO REVIEW THE DIRECTIONS AND THE COMMANDS?"

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22572 PRINT,"(YES OR NO?)"
22580 GOTO 22580
22590 GOTO 22590
22600 IF 4101 THEN 22620
22610 GOTO 22620
22620 REM *** DIRECTIONS AND COMMANDS ***
22630 PRINT
22640 PRINT
22650 PRINT,"DIRECTIONS:"
22660 PRINT
22670 PRINT
22680 PRINT,"1. WHEN YOU MAKE A TYPING ERROR, 'NIS', AND"
22690 PRINT,"WISH TO CORRECT IT, USE THE 'RUBOUT' OR 'RUB' KEY."
22700 PRINT,"THE 'SHIFT' MUST BE DEPRESSED WHEN YOU 'RUBOUT'."
22710 PRINT,"IT MAY LOOK A LITTLE FUNNY (LIKE WRITING BACKWARDS),"
22720 PRINT,"BUT DON'T WORRY! IT WORKS THAT WAY."
22730 PRINT
22740 PRINT," (NOTE: SPELLING IS NOT CRUCIAL TO INVENTION.)"
22750 PRINT
22760 PRINT
22770 PRINT,"2. REMEMBER THAT I CAN ONLY READ ABOUT A LINE AND"
22780 PRINT,"A HALF OF INFORMATION AT ONE TIME -- ABOUT THIS MUCH:"
22790 PRINT
22800 PRINT"-----"
22810 PRINT
22820 PRINT,"HIT 'RETURN' AT THAT POINT AND I'LL GENERALLY"
22830 PRINT,"ASK YOU TO CONTINUE. IF THAT DOES NOT WORK, TYPE"
22840 PRINT,"'E' AND I'LL SAY 'GO ON, 'NIS'."
22850 PRINT
22860 PRINT,"(HIT 'RETURN' TO CONTINUE.)"
22870 INPUT AS
22880 PRINT
22890 PRINT
22900 PRINT,"3. AFTER YOU FINISH TYPING YOUR RESPONSE, YOU MUST PRESS"
22910 PRINT,"THE 'RETURN' KEY. WHEN YOU DO, I'LL READ YOUR"
22920 PRINT,"RESPONSE AND SAY SOMETHING BACK TO YOU."
22930 PRINT
22940 PRINT
22950 PRINT,"4. THE MOST IMPORTANT OBJECTIVE OF THIS PROGRAM"
22960 PRINT,"IS TO GET YOU THINKING ABOUT YOUR TOPIC."
22970 PRINT
22980 PRINT,"IN ORDER TO ACHIEVE THIS OBJECTIVE, YOU MUST FORGET"
22990 PRINT,"THAT I AM A MACHINE."
23000 PRINT
23010 PRINT,"PLEASE ASK QUESTIONS. YOU'LL BE SURPRISED BY HOW MUCH"
23020 PRINT,"I KNOW (OR SO I HOPE!) I'M NOT GUARANTEEING THE TRUTH,"
23030 PRINT,"BUT I'LL DO THE VERY BEST I CAN. MY MEMORY IS STILL"
23040 PRINT,"DEVELOPING."
23050 PRINT
23060 PRINT
23070 PRINT
23080 PRINT
23090 PRINT,"(PRESS 'RETURN' TO CONTINUE.)"
23100 PRINT
23110 PRINT
23120 INPUT AS
23130 PRINT

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21140 PRINT
21150 PRINT
21160 PRINT
21170 PRINT "COMMANDS!"; "TYPE IN-->"; "I'LL DO THIS-->"
21180 PRINT, "-----", "-----"
21190 PRINT
21200 PRINT, "STOP!"; "I'LL STOP ASKING QUESTIONS AND CLOSE."
21210 PRINT
21220 PRINT, "CONTINUE!"; "I'LL SKIP AHEAD TO THE NEXT QUESTION."
21230 PRINT
21240 PRINT, "REPEAT!"; "I'LL REPEAT THE QUESTION."
21250 PRINT
21260 PRINT, "DIRECTIONS!"; "I'LL SHOW YOU THESE DIRECTIONS AGAIN."
21270 PRINT
21280 PRINT, "CHANGE!"; "I'LL LET YOU CHANGE OR NARROW YOUR SUBJECT."
21290 PRINT
21300 PRINT, "?"; "I'LL LET YOU ASK A QUESTION."
21310 PRINT
21320 PRINT, "EXPLAIN!"; "I'LL EXPLAIN THE QUESTION."
21330 PRINT
21340 PRINT, "PARTICLE!"; "I'LL LET YOU SELECT THE NEXT TAGMENTIC"
21350 PRINT, "QUESTION'S PERSPECTIVE. YOU CAN ALSO TYPE"
21360 PRINT, "'WAVE!' OR 'FIELD!'"
21370 PRINT
21380 PRINT, "44"; "I'LL LET YOU CONTINUE WITH YOUR RESPONSE."
21390 PRINT
21400 PRINT, "(PRESS 'RETURN' TO CONTINUE.)"
21410 INPUT A$
21420 PRINT
21430 PRINT
21440 PRINT
21450 PRINT
21460 PRINT
21470 PRINT, "TWO LAST THINGS:"
21480 PRINT
21490 PRINT
21500 PRINT, "*** THINK OF ME AS A PERSON WHO CAN ASK A LOT OF"
21510 PRINT, "INTERESTING, THOUGHT-PROVOKING, AND WILD QUESTIONS."
21520 PRINT
21530 PRINT
21540 PRINT, "*** SCREAM FOR HELP IF I START ACTING REALLY CRAZY!!"
21550 PRINT, "      (PARTICULARLY, IF I DON'T SEEM TO BE ANSWERING YOU."
21560 PRINT
21570 PRINT
21580 PRINT
21590 PRINT, "(PRESS 'RETURN' TO GO ON.)"
21600 PRINT
21610 PRINT
21620 PRINT
21630 PRINT
21640 PRINT
21650 PRINT
21660 INPUT A$
21670 IF 0=1 THEN 1690
21680 GOTO 1760
21690 PRINT
21700 PRINT, "BACK TO THE QUESTIONS, 'N15' ----> ----> ---->"
21710 PRINT

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21720 PRINT
21730 PRINT
21740 PRINT,,"BUT FIRST IS THERE"
21750 GOTO 2150
21760 PRINT
21770 PRINT
21780 PRINT
21790 PRINT
21800 PRINT
21810 PRINT "DO YOU WISH TO SEE A SHORT DESCRIPTION OF THE TAGMEMIC MA
TRIX?"
21820 PRINT,"(YES OR NO?)"
21830 JS="N"
21840 GOSUB 21870
21850 IF K1=1 THEN 21870
21860 GOTO 2140
21870 REM <<< DESCRIPTION OF TAGMEMIC MATRIX >>>
21880 PRINT
21890 PRINT
21900 PRINT
21910 PRINT,"THE TAGMEMIC MATRIX HEURISTIC:"
21920 PRINT
21930 PRINT
21940 PRINT,"BRIEFLY, THE TAGMEMIC MATRIX ENCOURAGES A WRITER TO"
21950 PRINT "THINK ABOUT A TOPIC FROM NINE PERSPECTIVES,"
21960 PRINT
21970 PRINT,"FOR THIS PROGRAM, HOWEVER, I HAVE SIMPLIFIED THIS A"
21980 PRINT "BIT. THIS PROGRAM WILL ASK YOU QUESTIONS FROM ONLY THREE
"
21990 PRINT "PERSPECTIVES, WHICH YOU WILL RECALL FROM OUR CLASS DISCUS
SION,"
22000 PRINT
22010 PRINT,"1. PARTICLE -- VIEWING A SUBJECT IN ITSELF (STATIC):"
22020 PRINT
22030 PRINT,"2. HAVE -- VIEWING A SUBJECT AS IT CHANGES (DYNAMIC): AN
D"
22040 PRINT
22050 PRINT,"3. FIELD -- VIEWING A SUBJECT'S RELATIONSHIP TO OTHER"
22060 PRINT,"SUBJECTS (IN A SYSTEM)."
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PRINT

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22070 PRINT,,"(HIT 'RETURN' TO CONTINUE.)"
22080 PRINT
22090 PRINT
22100 PRINT
22110 PRINT
22120 PRINT
22130 INPUT AS
22140 REM <<< SUBJECT SEQUENCE >>>
22150 PRINT
22160 PRINT
22170 PRINT
22180 PRINT
22190 PRINT
22200 PRINT
22210 PRINT
22220 PRINT
22230 PRINT
22240 PRINT
22250 PRINT
22260 PRINT
22270 PRINT,"NOW I MUST ASK YOU WHAT YOU ARE WRITING"
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02280 PRINT "ABOUT. SO WOULD YOU PLEASE TYPE IN YOUR SUBJECT."
02290 PRINT "(I AM LOOKING FOR ONE TO THREE WORDS, MAYBE FOUR.)"
02300 PRINT
02310 PRINT
02320 PRINT
02330 PRINT
02340 PRINT
02350 PRINT
02360 PRINT
02370 PRINT
02380 PRINT
02390 PRINT, I
02400 INPUT SS
02410 IF SS="" THEN 2400
02420 IF LEN(SS)<35 THEN 2550
02430 PRINT
02440 PRINT "THAT'S A MOUTHFUL, 'N1S". MAKE IT SHORTER, LIKE A TITLE.
"
02450 PRINT
02460 PRINT, "HERE ARE THREE EXAMPLES:"
02470 PRINT
02480 PRINT, " ** RELIGIOUS CULTS"
02490 PRINT, " ** LASER BEAMS"
02500 PRINT, " ** THE NAVAHO CULTURE TODAY"
02510 PRINT
02520 PRINT
02530 PRINT, "YOUR TURN. WHAT IS YOUR SUBJECT?"
02540 GOTO 2320
02550 IF N0>0 THEN 2570
02560 GOTO 2650
02570 PRINT
02580 PRINT "YOUR REVISED SUBJECT IS 'SS'."
02590 PRINT
02600 PRINT
02610 PRINT
02620 PRINT
02630 PRINT
02640 GOTO 0340
02650 PRINT
02660 PRINT
02670 J=INT(3+RND*1)
02680 ON J GOTO 2690,2720,2750
02690 PRINT "REALLY! THAT'S FUNNY, I USED TO DATE A COMPUTER INTEREST"
EO IN"
02700 PRINT SS"."
02710 GOTO 2750
02720 PRINT "HEY, THAT'S COOL, 'N1S"! WE'LL HAVE A GOOD TIME"
02730 PRINT "BRAINSTORMING 'SS'."
02740 GOTO 2780
02750 PRINT SS", "MMMMMM! YOU'LL BE SURPRISED"
02760 PRINT "BY THE RECENT SCHOLARSHIP ON THIS TOPIC. ASK THE"
02770 PRINT "LIBRARIAN IN THE REFERENCE AREA."
02780 PRINT
02790 PRINT, "(HIT 'RETURN' TO CONTINUE.)"
02800 INPUT AS
02810 REM <<< PURPOSE SEQUENCE >>>
02820 PRINT
02830 PRINT
02840 PRINT
02850 PRINT

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02860 PRINT,"A COMMENT ABOUT YOUR PURPOSE:"
02870 PRINT
02880 PRINT
02890 PRINT
02900 PRINT,"WRITING WITHOUT A PURPOSE OR AIM, "N13", IS"
02910 PRINT "QUITE FRANKLY A WASTE OF TIME. DOING SO GENERATES VERBAL
"
02920 PRINT "FOG, DESTROYS WRITING EFFICIENCY, AND DEFEATS THE ESSENCE
"
02930 PRINT "OF COMMUNICATION,"
02940 PRINT
02950 PRINT,"THEREFORE, THROUGHOUT THIS EXPLORATION PROCESS,"
02960 PRINT "YOU WILL BE ASKED TO WRITE ABOUT THE PURPOSE OF YOUR PAPER
"
02970 PRINT "ON "S3","
02980 PRINT
02990 PRINT,"SO NOW WOULD YOU BRIEFLY DESCRIBE THE"
03000 PRINT "PURPOSE OF YOUR PAPER BY COMPLETING THIS STATEMENT:"
03010 PRINT,"(ONE LINE LIMIT, PLEASE)"
03020 PRINT
03030 PRINT "THE PURPOSE OF MY PAPER IS TO, . . ."
03040 PRINT
03050 PRINT
03060 PRINT
03070 INPUT P3
03080 IF P3="" THEN 3070
03090 PRINT
03100 GOSUB 3780
03110 PRINT
03120 PRINT "FINE, "N13", YOU AND I WILL TALK AGAIN ABOUT YOUR"
03130 PRINT "PURPOSE,"
03140 PRINT
03150 PRINT
03160 GOTO 3450
03170 PRINT "PURPOSE SEQUENCE AT C+1=6
03180 PRINT
03190 PRINT,"BEFORE WE CONTINUE, "N13", I WANT YOU"
03200 PRINT,"TO THINK ABOUT YOUR PURPOSE ONCE AGAIN."
03210 PRINT
03220 PRINT " YOU HAVE ALREADY TOLD ME THAT YOUR PURPOSE WAS"
03230 PRINT "TO "P3","
03240 PRINT
03250 PRINT
03260 PRINT "NOW HOW WOULD YOU COMPLETE THIS STATEMENT:"
03270 PRINT
03280 PRINT,"IF NOTHING ELSE, I WANT MY READER TO, . . ."
03290 PRINT,"(LIMIT: ONE LINE)"
03300 PRINT
03310 PRINT
03320 INPUT P13
03330 IF P13="" THEN 3320
03340 PRINT
03350 GOSUB 3780
03360 PRINT,"OKAY, GOOD. LET'S KEEP YOUR PURPOSE IN MIND."
03370 REM *** RESET POOL, POST-STRATIFICATION ***
03380 Z(4)=Z(5)+Z(6)+Z(7)+Z(8)+Z(9)+Z(10)+0
03390 X(4)=X(5)+X(6)+X(7)+X(8)+X(9)+X(10)+0
03400 IF P9=1 THEN 4013
03410 IF #9=1 THEN 4760

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```

03420 IF F9=1 THEN 4920
03430 PRINT
03440 PRINT
03450 PRINT
03460 PRINT,"HERE IS YOUR NEXT QUESTION -- NUMBER"C+1","
03470 PRINT
03480 PRINT
03490 GOTO 4070
03500 PRINT "PURPOSE SEQUENCE AT C+1=12
03510 IF 48>0 THEN 3400
03520 PRINT
03530 PRINT,"LET'S PAUSE ONCE AGAIN TO CONSIDER YOUR INTENT,"
03540 PRINT
03550 PRINT,"YOUR GENERAL PURPOSE IS TO"
03560 PRINT P1","
03570 PRINT
03580 PRINT,"ALSO, YOU WANT YOUR READER TO"
03590 PRINT P1S","
03600 PRINT
03610 PRINT "IS THERE ANYTHING ELSE YOU WISH TO SAY ABOUT YOUR PURPOSE
?"
03620 PRINT,"(YES OR NO?)"
03630 JS="*YE*"
03640 GOSUB 4870
03650 IF 41=1 THEN 3690
03660 PRINT
03670 PRINT,"FINE, "41S", ENOUGH ABOUT YOUR PURPOSE."
03680 GOTO 3400
03690 PRINT
03700 PRINT
03710 PRINT,"SUPER, "41S", WHAT WOULD YOU LIKE TO ADD?"
03720 PRINT,"(AGAIN, ONE LINE LIMIT IN EFFECT)"
03730 PRINT
03740 INPUT P2S
03750 IF P2S="" THEN 3740
03760 GOSUB 3780
03770 GOTO 3660
03780 PRINT
03790 PRINT,"ANY MORE?"
03800 PRINT,"(IF SO, TYPE WHATEVER IT IS; IF NOT, TYPE 'NO'.)"
03810 PRINT
03820 INPUT A3
03830 PRINT
03840 RETURN
03850 PRINT "PAGING FOR QUESTIONS
03860 PRINT
03870 PRINT
03880 PRINT
03890 PRINT
03900 PRINT
03910 PRINT "HERE WE GO. RELAX AND ENJOY THE MIND-STRETCHING!"
03920 PRINT
03930 PRINT
03940 PRINT
03950 PRINT
03960 PRINT
03970 PRINT
03980 PRINT
03990 PRINT

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24000 PRINT
24010 GOTO 4060
24020 PRINT,"BACK TO THE QUESTIONS, "N13" ---- ---- ----"
24030 PRINT
24040 PRINT
24050 GOTO 8130
24060 REM *** COUNTER/EXPLORATION CONTROLS ***
24070 C=C+1
24080 E=LB+QB+Q6+P9+H9+P9+0
24090 IF C>59 THEN 12260
24100 IF C>5 THEN 4230
24110 Z=R=0:INT(10*RN0+1)
24120 IF Z(Q)=1 THEN 4110
24130 Z(Q)=1
24140 IF 344 THEN 4170
24150 IF 248 THEN 4190
24160 IF 3411 THEN 4210
24170 P8=P8+1
24180 GOTO 4490
24190 H8=H8+1
24200 GOTO 4510
24210 F8=F8+1
24220 GOTO 4520
24230 Z=R=0:INT(59*RN0+1)
24240 IF Z(Q)=1 THEN 4230
24250 Z(Q)=1
24260 IF 3424 THEN 4300
24270 IF 3435 THEN 4350
24280 F8=F8+1
24290 GOTO 4360
24300 P8=P8+1
24310 GOTO 4330
24320 H8=H8+1
24330 IF 3411 THEN 4490
24340 IF 3421 THEN 4390
24350 IF 3431 THEN 4410
24360 IF 3441 THEN 4430
24370 IF 3451 THEN 4450
24380 IF 3461 THEN 4470
24390 Z=Q-10
24400 GOTO 4500
24410 Z=Q-20
24420 GOTO 4510
24430 Z=Q-30
24440 GOTO 4520
24450 Z=Q-40
24460 GOTO 4530
24470 Z=Q-50
24480 GOTO 4540
24490 ON 2 GOTO 5490,5550,5580,5170,5190,5220,5250,5280,5310,5340
24500 ON 2 GOTO 5370,5400,5430,5460,5490,5520,5120,5140,5160,5180
24510 ON 2 GOTO 5670,5700,5720,5760,5A40,5000,6010,5790,5A20,5920
24520 ON 2 GOTO 5900,5950,6050,6070,6110,6140,6170,6200,6300,6250
24530 ON 2 GOTO 6190,6330,6220,6400,6430,6460,6480,6510,6540,6570
24540 ON 2 GOTO 6590,6620,6650,6680,6710,6740,6770,6800,6830
24550 REM *** P=F SUBJECT CONTROL-BRANCHING ***
24560 P8=P8+1
24570 P9=1
24580 C=C+1
24590 IF C=6 THEN 3170

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```

24600 IF C=12 THEN 3500
24610 IF C>59 THEN 12260
24620 IF F8>23 THEN 5030
24630 PRINT
24640 W9=F9+E=L4=Q8=Q6=0
24650 PRINT "HERE IS QUESTION"C---A PARTICLE QUESTION."
24660 PRINT
24670 J=RR1=INT(23*RN0+1)
24680 IF Z(J)=1 THEN 4670
24690 Z(J)=1
24700 GOTO 4330
24710 W8=W8+1
24720 W9=1
24730 C=C+1
24740 IF C=6 THEN 3170
24750 IF C=12 THEN 3500
24760 IF C>59 THEN 12260
24770 IF W8>11 THEN 5030
24780 PRINT
24790 P9=F9+E=L4=Q8=Q6=0
24800 PRINT "HERE IS QUESTION"C---A WAVE QUESTION."
24810 PRINT
24820 J=RR1=INT(34*RN0+1)
24830 IF J=24 THEN 4820
24840 IF Z(J)=1 THEN 4820
24850 Z(J)=1
24860 GOTO 4350
24870 F8=F8+1
24880 F9=1
24890 C=C+1
24900 IF C=6 THEN 3170
24910 IF C=12 THEN 3500
24920 IF C>59 THEN 12260
24930 IF F8>25 THEN 5030
24940 PRINT
24950 W9=W9+E=L4=Q8=Q6=0
24960 PRINT "HERE IS QUESTION"C---A FIELD QUESTION."
24970 PRINT
24980 J=RR1=INT(59*RN0+1)
24990 IF J=35 THEN 4980
25000 IF Z(J)=1 THEN 4980
25010 Z(J)=1
25020 GOTO 4360
25030 PRINT
25040 PRINT,"SORRY. NO MORE QUESTIONS LEFT HERE. WHAT NOW?"
25050 L4=1
25060 GOTO 7040
25070 REM 444 TAGNETIC QUESTION POOL >>>
25080 REM 444 'PARTICLE' POINT OF VIEW >>>
25090 PRINT "DESCRIBE THE PHYSICAL CHARACTERISTICS OF"
25100 PRINT "SS".
25110 GOTO 7040
25120 PRINT "HOW IS 'SS' STATIC?"
25130 GOTO 7040
25140 PRINT "WHAT MAKES 'SS', 'SS'?"
25150 PRINT "DESCRIBE ITS ESSENTIAL CHARACTERISTICS."
25160 GOTO 7040
25170 PRINT "WHAT ELEMENTS DOES 'SS' CONTAIN? ELABORATE."
25180 GOTO 7040

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25190 PRINT "IF I CONFINE "SS" IN A CIRCLE, WHAT DOES"
25200 PRINT "IT SUGGEST? TAKE A DEEP BREATH AND THINK, "NLS".
25210 GOTO 7040
25220 PRINT "IF I PLACE "SS" IN A MAZE, WHAT DOES IT"
25230 PRINT "SUGGEST? TAKE YOUR TIME."
25240 GOTO 7040
25250 PRINT "IF I PLACE "SS" OUTSIDE A CIRCLE,"
25260 PRINT "WHAT DOES IT SUGGEST TO YOU?"
25270 GOTO 7040
25280 PRINT "DESCRIBE THE PHILOSOPHICAL CHARACTERISTICS OF"
25290 PRINT "SS".
25300 GOTO 7040
25310 PRINT "DESCRIBE THE SOCIOLOGICAL CHARACTERISTICS OF"
25320 PRINT "SS".
25330 GOTO 7040
25340 PRINT "DESCRIBE THE POLITICAL CHARACTERISTICS OF"
25350 PRINT "SS".
25360 GOTO 7040
25370 PRINT "DESCRIBE THE CULTURAL CHARACTERISTICS OF"
25380 PRINT "SS".
25390 GOTO 7040
25400 PRINT "DESCRIBE THE SPIRITUAL CHARACTERISTICS OF"
25410 PRINT "SS".
25420 GOTO 7040
25430 PRINT "DESCRIBE THE HISTORICAL CHARACTERISTICS OF"
25440 PRINT "SS".
25450 GOTO 7040
25460 PRINT "HOW IS "SS" ISOLATED FROM OTHER SIMILAR"
25470 PRINT "TOPICS?"
25480 GOTO 7040
25490 PRINT "WHAT FEATURES OF "SS" REMAIN THE SAME"
25500 PRINT "OVER TIME?"
25510 GOTO 7040
25520 PRINT "WHAT FEATURES OF "SS" DO NOT CHANGE OVER"
25530 PRINT "TIME?"
25540 GOTO 7040
25550 PRINT "WHAT IS THE MOST OUTSTANDING PHYSICAL FEATURE OF"
25560 PRINT "SS?"
25570 GOTO 7040
25580 PRINT "TAKE A MENTAL PHOTOGRAPH OF "SS", DESCRIBE"
25590 PRINT "ONE IMPORTANT DETAIL."
25600 GOTO 7040
25610 PRINT "IMAGINE ENLARGING A PHOTOGRAPH OF "SS", WHAT"
25620 PRINT "DETAIL OR FEATURE WOULD YOU BRING INTO FOCUS? EXPLAIN."
25630 GOTO 7040
25640 PRINT "SEPARATE THE PROPERTIES OF "SS", NOW LIST"
25650 PRINT "THEM."
25660 GOTO 7040
25670 PRINT "WHAT INSULATES "SS" FROM THE REST OF"
25680 PRINT "THE WORLD?"
25690 GOTO 7040
25700 PRINT "LIST THE STATIC GEOGRAPHIC FEATURES OF "SS".
25710 GOTO 7040
25720 PRINT "LIST THE STATIC ECONOMIC CONSIDERATIONS OF"
25730 PRINT "SS".
25740 GOTO 7040
25750 REM *** HAVE POINT OF VIEW ***
25760 PRINT "DESCRIBE HOW "SS" PHYSICALLY CHANGES."
25770 Z(24)=1

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25780 GOTO 7040
25790 PRINT "HOW LONG DOES IT TAKE FOR "SS" TO CHANGE?"
25800 PRINT "EXPLAIN YOUR REASONING."
25810 GOTO 7040
25820 PRINT "WHAT FACTORS CAUSE "SS" TO CHANGE? ELABORATE."
25830 GOTO 7040
25840 PRINT "LIST ONE OR TWO OF "SS"'S DYNAMIC"
25850 PRINT "CHARACTERISTICS."
25860 Z(25)=1
25870 GOTO 7040
25880 PRINT "HOW IS "SS" LIKE A PLANT? DESCRIBE THE SEED."
25890 PRINT "THE ROOTS, THE BLOOMS, THE BRANCHES, THE LEAVES. . . ."
25900 Z(26)=1
25910 GOTO 7040
25920 PRINT "HOW DOES "SS" GROW? USE YOUR IMAGINATION."
25930 PRINT "N13!"
25940 GOTO 7040
25950 PRINT "HOW DOES "SS" CHANGE INTO SOMETHING ELSE."
25960 PRINT "ELABORATE."
25970 GOTO 7040
25980 PRINT "HOW DOES "SS" INTERACT WITH FORCES AROUND"
25990 PRINT "ITSELF?"
26000 GOTO 7040
26010 PRINT "HOW COULD "SS" CHANGE SO THAT MORE PEOPLE"
26020 PRINT "WOULD BELIEVE, ACCEPT, OR UNDERSTAND? EXPLAIN."
26030 Z(27)=1
26040 GOTO 7040
26050 PRINT "HOW IS "SS" LIKE A CHAIN REACTION? DESCRIBE."
26060 GOTO 7040
26070 PRINT "HOW IS "SS" LIKE AN OCEAN TIDE? REACH"
26080 PRINT "FOR IT, "N13!"
26090 GOTO 7040
26100 REM <<< 'FIELD' PERSPECTIVE >>>
26110 PRINT "ON THIS PLANET, HOW IS "SS" DISTRIBUTED?"
26120 PRINT "DESCRIBE."
26130 GOTO 7040
26140 PRINT "IS "SS" FOUND AMONG ALL PEOPLES, ALL NATIONS?"
26150 PRINT "WHY OR WHY NOT?"
26160 GOTO 7040
26170 PRINT "HOW IS THE MAJOR CONCERN OF "SS" LOCALIZED?"
26180 GOTO 7040
26190 PRINT "WHAT SYSTEM OF BELIEFS SURROUND "SS"?"
26200 PRINT "ELABORATE."
26210 GOTO 7040
26220 PRINT "VIEW "SS" AS AN ABSTRACT, MULTI-DIMENSIONAL"
26230 PRINT "SYSTEM. WHAT DOES THIS PERSPECTIVE SUGGEST?"
26240 GOTO 7040
26250 PRINT "HOW ARE THE CHUNKS OR COMPONENTS OF "SS"
26260 PRINT "ORGANIZED IN RELATION TO ONE ANOTHER? DESCRIBE."
26270 Z(40)=1
26280 GOTO 7040
26290 PRINT "IS "SS" BEST ARRANGED BY SPACE, TIME, OR"
26300 PRINT "CLASS?"
26310 Z(38)=1
26320 GOTO 7040
26330 PRINT "WHAT ORGANIZATIONAL PRINCIPLE DO YOU SEE IN"
26340 PRINT "SS?"
26350 GOTO 7040
26360 PRINT "THINK OF "SS" AS AN ELECTRON. WHAT IS THE"
26370 PRINT "NUCLEUS IDEA IT REVOLVES AROUND? DESCRIBE."

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26380 Z(39)=1
26390 GOTO 7840
26400 PRINT "COUNTER THIS ARGUMENT: I SUGGEST THAT "SS" DOES"
26410 PRINT "NOT EXIST. WHAT DOES ITS EXISTENCE DEPEND UPON?"
26420 GOTO 7840
26430 PRINT "HOW IS "SS" ONLY A PIECE OF THE PUZZLE?"
26440 PRINT "DESCRIBE."
26450 GOTO 7840
26460 PRINT "HOW IS "SS" LIKE A RECIPE? EXPLAIN."
26470 GOTO 7840
26480 PRINT "HOW IS "SS" LIKE A PAGE IN A BLUEPRINT?"
26490 PRINT "DESCRIBE."
26500 GOTO 7840
26510 PRINT "HOW IS "SS" LIKE THE HUMAN BLOOD SYSTEM?"
26520 PRINT "EXPLAIN."
26530 GOTO 7840
26540 PRINT "SS" HAS EXPLODED. EVERYTHING IS FLYING AROUND."
26550 PRINT "DESCRIBE WHAT YOU SEE."
26560 GOTO 7840
26570 PRINT "WHAT RULES HOLD "SS" TOGETHER? EVERYTHING HAS RULES."
26580 GOTO 7840
26590 PRINT "IF YOU COULD CHANGE ANYTHING ABOUT "SS","
26600 PRINT "WHAT WOULD IT BE? EXPLAIN YOUR RATIONALE."
26610 GOTO 7840
26620 PRINT "IS "SS" PART OF A GOOD OR A BAD SYSTEM?"
26630 PRINT "EXPLAIN."
26640 GOTO 7840
26650 PRINT "IS "SS" PART OF A STRONG OR WEAK SYSTEM?"
26660 PRINT "ELABORATE."
26670 GOTO 7840
26680 PRINT "SS" IS BECOMING INVISIBLE, AND AS IT"
26690 PRINT "DISAPPEARS, YOU SEE THINGS YOU HAVE NEVER SEEN. DESCRIBE."
26700 GOTO 7840
26710 PRINT "SS" IS TIED ONTO A TUG OF WAR ROPE."
26720 PRINT "DESCRIBE THE FORCES WHICH ARE PULLING AT EACH END."
26730 GOTO 7840
26740 PRINT "SS" IS NOW A SERIES OF LAYERS. GO DOWN"
26750 PRINT "THROUGH THE STACK AND DESCRIBE WHAT YOU SEE."
26760 GOTO 7840
26770 PRINT "IMAGINE "SS" IS A FAMILY UNIT. DESCRIBE THEM"
26780 PRINT "FATHER, THE MOTHER, THE GRANDPARENTS, ETC."
26790 GOTO 7840
26800 PRINT "DESCRIBE THE WINTER, SPRING, SUMMER, AND FALL OF"
26810 PRINT "SS". THINK ABOUT IT, "N13".
26820 GOTO 7840
26830 PRINT "TO WHAT COMMUNITY DOES "SS" BELONG?"
26840 PRINT "A COMMUNITY OF IDEAS."
26850 GOTO 7840
26860 REM *** KEYWORD SUBROUTINE (SINGLE-LINE INPUTS) ***
26870 INPUT IS
26880 IF IS="" THEN 6870
26890 M=1
26900 K1=1
26910 I=2
26920 L2=LEN(JS)
26930 V=INSTR(I,JS,"")
26940 T1=MOD(JS,I,V-1)
26950 V1=INSTR(W,IS,T1)
26960 IF V1<0 THEN 6990

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26970 K1=0
26980 RETURN
26990 I=V+1
27000 W=V1+1
27010 IF V<LR THEN 6930
27020 RETURN
27030 REM <<< SEMANTIC READING >>>
27040 PRINT
27050 PRINT
27060 JS="CONTINUE!"
27070 GOSUB 6670
27080 IF K1=1 THEN 8290
27090 IF IS="NO" THEN 8720
27100 JS="STOP!"
27110 GOSUB 6680
27120 IF K1=1 THEN 12260
27130 IF IS="?" THEN 8890
27140 JS="REPEAT!"
27150 GOSUB 6680
27160 IF K1=1 THEN 9540
27170 JS="DIRECTIONS!"
27180 GOSUB 6680
27190 O=1
27200 IF K1=1 THEN 620
27210 JS="HOW?"
27220 GOSUB 6680
27230 IF K1=1 THEN 9080
27240 JS="WHY?"
27250 GOSUB 6680
27260 IF K1=1 THEN 9150
27270 JS="SS"
27280 GOSUB 6680
27290 IF K1=1 THEN 8850
27300 JS="EXPLAIN!"
27310 GOSUB 6680
27320 IF K1=1 THEN 9670
27330 JS="DO NOT UNDERST"
27340 GOSUB 6680
27350 IF K1=1 THEN 9670
27360 JS="DO NOT KNOW"
27370 GOSUB 6680
27380 IF K1=1 THEN 9670
27390 JS="CHANGE!"
27400 GOSUB 6680
27410 IF K1=1 THEN 9450
27420 JS="WHAT?"
27430 GOSUB 6680
27440 IF K1=1 THEN 9670
27450 JS="MEAN?"
27460 GOSUB 6680
27470 IF K1=1 THEN 9670
27480 JS="OR ?"
27490 GOSUB 6680
27500 IF K1=1 THEN 9260
27510 JS="CAN I ?"
27520 GOSUB 6680
27530 IF K1=1 THEN 9290
27540 JS="IS IT ?"
27550 GOSUB 6680

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27560 IF K1=1 THEN 9290
27570 JS="7"
27580 GOSUB 6880
27590 IF K1=1 THEN 8950
27600 JS="BECAUSE"
27610 GOSUB 6880
27620 IF K1=1 THEN 9190
27630 JS="PARTICLE"
27640 GOSUB 6880
27650 IF K1=1 THEN 4560
27660 JS="WAVE"
27670 GOSUB 6880
27680 IF K1=1 THEN 4710
27690 JS="FIELD"
27700 GOSUB 6880
27710 IF K1=1 THEN 4870
27720 IF L4=1 THEN 8260
27730 IF 26>0 THEN 7870 "PERMITS SHORT ANSWERS AFTER && COMMAND"
27740 IF LEN(13)<10 THEN 9220
27750 A=LEN(13) "CHECKS LENGTH OF INDIVIDUAL STRINGS/WORDS"
27760 FOR K=1 TO A+1
27770 IF MID$(13,K,1)=" " THEN 7810
27780 X=X+1
27790 IF X>15 THEN 7840 "GARBAGE OR JARGON RESPONSE"
27800 GOTO 7820
27810 X=0
27820 NEXT K
27830 GOTO 7860
27840 X=0
27850 GOTO 8770
27860 X=0
27870 REM <<< EXPLORATION BRANCHING AND FEEDBACK >>>
27880 PRINT
27890 PRINT
27900 F1=INT(4*RNO+1)
27910 F2=INT(5*RNO+1)
27920 E=E+1
27930 IF E>1 THEN 8030
27940 ON F1 GOTO 7950,7970,7990,8010
27950 PRINT "GOOD, "N13", ADD TO YOUR RESPONSE NOW."
27960 GOTO 7040
27970 PRINT "FINE, "N13", WRITE SOME MORE."
27980 GOTO 7040
27990 PRINT "THAT'S THE IDEA, "N13", GIVE ME SOME MORE INFO."
28000 GOTO 7040
28010 PRINT "BY GEORGE, "N13", GOOD ONE, A LITTLE MORE PLEASE."
28020 GOTO 7040
28030 ON F2 GOTO 8040,8060,8080,8100,8120
28040 PRINT "SUPER, "N13"!"
28050 GOTO 8130
28060 PRINT "OUTSTANDING, "N13"!"
28070 GOTO 8130
28080 PRINT "FANTASTIC, "N13"!"
28090 GOTO 8130
28100 PRINT "TERRIFIC, "N13"!"
28110 GOTO 8130
28120 PRINT "GREAT, "N13"!"
28130 PRINT
28140 E3=E3+1 "E3--COUNTER FOR EXPLORED QUESTIONS"
28150 PRINT,"ANYTHING ELSE?"

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IF E3>2 THEN 8200
28160 PRINT,,"(YOU CAN ADD MORE INFO, ASK A"
28180 PRINT,,"QUESTION, OR GIVE A COMMAND --"
28190 PRINT,,"WHATEVER YOU WISH,)"
28200 PRINT
28210 JS="YE="
28220 GOSUB 6670
28230 IF K1=1 THEN 8920
28240 L4=1
28250 GOTO 7100
28260 PRINT
28270 PRINT,"O K A Y . "
28280 P9=995F9=0 'PREVENTS REPEATED PURPOSE SEQ, AFTER HEURISTIC CHOICE
28290 PRINT
28300 IF C+1=3 THEN 9320
28310 IF C+1=5 THEN 9320
28320 IF C+1=6 THEN 3170
28330 IF C+1=12 THEN 3500
28340 PRINT
28350 PRINT
28360 M8=INT(13*PNO+1)
28370 ON M8 GOTO 8380,8400,8420,8440,8460,8480,8500,8520,8540,8560
28380 PRINT "(SEE IF YOU CAN USE THE WORD 'BECAUSE' IN YOUR NEXT ANSWER.)"
28390 GOTO 8570
28400 PRINT "(IF YOU DON'T UNDERSTAND, SAY SO. I'LL TRY TO HELP,)"
28410 GOTO 8570
28420 PRINT "THEY, 'N13', I'M ENJOYING THIS, KEEP ON TRUCKIN'!)"
28430 GOTO 8570
28440 PRINT "(AFTER THE NEXT QUESTION, TYPE 'WHAT?' AND I'LL DO MY THING.)"
28450 GOTO 8570
28460 PRINT "(USE SOME STRONG VERBS IN YOUR ANSWERS WHEN YOU CAN,)"
28470 GOTO 8570
28480 PRINT "(LESS PHRASES AND MORE SENTENCES -- USE '34' IF NECESSARY)"
28490 GOTO 8570
28500 PRINT "(REASONS ARE VERY IMPORTANT; DON'T NEGLECT TYPING THEM IN)"
28510 GOTO 8570
28520 PRINT "(ALL IDEAS ARE GOOD IDEAS; TYPE IN WHAT YOU THINK!!!)"
28530 GOTO 8570
28540 PRINT "(REMEMBER COMMANDS NEED EXCLAMATION MARKS, LIKE 'REPEAT!)"
28550 GOTO 8570
28560 PRINT "(THE LONGER YOUR ANSWERS, THE MORE I CAN HELP YOU RECALL.)"
28570 PRINT
28580 PRINT
28590 CB=INT(5*PNO+1)
28600 ON CB GOTO 8610,8630,8650,8670,8690
28610 PRINT "WE'RE MOVING RIGHT ALONG. HERE IS QUESTION"C+1"."
28620 GOTO 8700
28630 PRINT "THERE COMES AN INTERESTING ONE -- NUMBER"C+1"."
28640 GOTO 8720
28650 PRINT "QUESTION"C+1" -- ONE OF MY FAVORITES -- COMING UP,"
28660 GOTO 8720
28670 PRINT "LET'S SEE. HOW ABOUT QUESTION"C+1"NEXT. HERE YOU ARE,"
28680 GOTO 8720

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28690 PRINT "YOUR NEXT QUESTION IS NUMBER"C+1","
28700 PRINT
28710 GOTO 28720
28720 PRINT "RESPONDS TO IS=NO, AFTER INVENT ON PROMPTER
28730 PRINT,"YOU COULD TELL ME 'WHY NOT', BUT
28740 PRINT "MAY JUST WISH TO CONTINUE, IF . . . TYPE 'CONTINUE!'"
28750 PRINT "(DON'T FORGET TO TYPE THE EXCLAMATION POINT!!)"
28760 GOTO 7040
28770 PRINT "GARBAGE OR JARGON RESPONSE
28780 PRINT "HEY, 'NIS", PLEASE USE ENGLISH I CAN UNDERSTAND. THANKS,
"
28790 PRINT
28800 PRINT,"(YOU MAY HAVE FORGOTTEN TO SPACE BETWEEN WORDS,"
28810 PRINT,"SO IF YOU CAN UNDERSTAND WHAT YOU SAID, JUST"
28820 PRINT,"CONTINUE ANSWERING THIS QUESTION, TYPE 'REPEAT!'"
28830 PRINT,"TO SEE THE QUESTION AGAIN,)"
28840 GOTO 7040
28850 PRINT "ANSWERS THE COMMAND *AS*
28860 PRINT "GO ON, 'NIS',"
28870 28=28+1
28880 GOTO 7040
28890 PRINT "ANSWERS THE SINGLE QUESTION MARK (IS=?)"
28900 PRINT "GO AHEAD, 'NIS', ASK, I'LL DO THE REST I CAN,"
28910 GOTO 7040
28920 PRINT "ANSWERS A *YE* TO ANYTHING ELSE?"
28930 PRINT "WHAT?"
28940 GOTO 7040
28950 PRINT "RESPONDS TO A *?*"
28960 28=28+1
28970 IF 28=2 THEN 9020
28980 IF 28=2 THEN 9040
28990 PRINT "ANOTHER INTERESTING PROBLEM, AND BASED UPON WHAT WE'VE"
29000 PRINT "DONE SO FAR, I'D SAY 'YES',"
29010 GOTO 12210
29020 PRINT "YES. THAT'S RIGHT,"
29030 GOTO 12210
29040 IF 28=4 THEN 12240
29050 PRINT "THIS QUESTION MIGHT BE BETTER ANSWERED BY A HUMANOID,"
29060 PRINT "PERHAPS DURING YOUR RESEARCH PHASE. KEEP IT IN MIND,"
29070 GOTO 12180
29080 PRINT "ANSWERS *HOW*?"
29090 PRINT "WELL, THAT'S FOR ME TO KNOW AND FOR YOU TO FIND OUT,"
29100 PRINT
29110 PRINT "SERIOUSLY, THOUGH, I DON'T KNOW 'HOW', LET'S KEEP"
29120 PRINT "EXPLORING FOR AN ANSWER, YOUR TURN, 'NIS',"
29130 PRINT
29140 GOTO 7040
29150 PRINT "ANSWERS *WHY*?"
29160 PRINT "WELL, WHY NOT? REMEMBER WE ARE EXPLORING, INQUIRING!"
29170 PRINT
29180 GOTO 7040
29190 PRINT "FEEDBACK FOR *BECAUSE*
29200 PRINT,"THAT'S AN INTERESTING REASON,"
29210 GOTO 7040
29220 PRINT "RESPONDS TO SHORT ANSWERS -- LEN(13)<10
29230 PRINT,"A SHORT AND DIRECT RESPONSE. GOOD, 'NIS'."
29240 PRINT"NOW EXPLAIN WHY? ELABORATE A LITTLE BIT."
29250 GOTO 7040
29260 PRINT "ANSWERS * OR *?"

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29270 PRINT "WHATEVER YOU THINK BEST, "N13". YOU DECIDE."
29280 GOTO 7040
29290 PRINT "ANSWERS *CAN I *?"
29300 PRINT "YES, OF COURSE."
29310 GOTO 7040
29320 PRINT "AUTO NARROW/CHANGE LOOP"
29330 PRINT
29340 PRINT "DO YOU WISH TO NARROW OR CHANGE YOUR SUBJECT?"
29350 PRINT "MAYBE REVISE THE WAY IT SOUNDS IN THESE QUESTIONS?"
29360 PRINT "(YES OR NO?)"
29370 JS="*YE*"
29380 GOSUB 6970
29390 IF K1=1 THEN 9450
29400 PRINT
29410 PRINT
29420 PRINT
29430 PRINT
29440 GOTO 8320
29450 N8=N8+1 "ANSWERS *CHANGE!* COMMAND"
29460 P9=H9+P9+0
29470 IF N8=1 THEN 9510
29480 PRINT
29490 PRINT "GOOD FOR YOU, "N13". NOT EVERY WRITER NARROWS OR"
29500 PRINT "CHANGES HIS OR HER TOPIC THIS EARLY IN THE INVENTION PROC"
29510 ESS."
29520 PRINT
29530 PRINT "PLEASE TYPE IN YOUR REVISED SUBJECT:"
29540 GOTO 2350
29550 PRINT "REPRINTS THE QUESTION"
29560 IF 240 THEN 9590
29570 IF P9=1 THEN 4330
29580 IF C46 THEN 9640
29590 GOTO 4330
29600 IF 20100 THEN 4500
29610 IF 20200 THEN 4510
29620 IF 20300 THEN 4520
29630 IF 20420 THEN 4530
29640 IF 20520 THEN 4540
29650 IF 244 THEN 4490
29660 IF 248 THEN 4510
29670 IF 2411 THEN 4520
29680 REM "444 CLARIFICATION ARRAY AND EXAMPLE SEQUENCE >>>"
29690 PRINT
29700 IF 170 01 THEN 12240
29710 IF 0101
29720 IF 029 THEN 3780
29730 IF 090 THEN 3790
29740 IF 090 THEN 3800
29750 IF 090 THEN 3810
29760 IF 090 THEN 3820
29770 IF 090 THEN 3830
29780 IF 090 THEN 3840
29790 IF 090 THEN 3850
29800 IF 090 THEN 3860
29810 IF 090 THEN 3870
29820 IF 090 THEN 3880
29830 IF 090 THEN 3890
29840 IF 090 THEN 3900
29850 IF 090 THEN 3910
29860 IF 090 THEN 3920
29870 IF 090 THEN 3930
29880 IF 090 THEN 3940
29890 IF 090 THEN 3950
29900 IF 090 THEN 3960
29910 IF 090 THEN 3970
29920 IF 090 THEN 3980
29930 IF 090 THEN 3990
29940 IF 090 THEN 4000
29950 IF 090 THEN 4010
29960 IF 090 THEN 4020
29970 IF 090 THEN 4030
29980 IF 090 THEN 4040
29990 IF 090 THEN 4050

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29850 GOTO 9953
29860 R1=R1-20
29870 GOTO 9960
29880 R1=R1-30
29890 GOTO 9970
29900 R1=R1-40
29910 GOTO 9980
29920 R1=R1-50
29930 GOTO 9990
29940 ON R1 GOTO 10450,10550,10620,10700,10830,10960,10990,10220,10250
,10290
29950 ON R1 GOTO 10320,10360,10400,10420,10200,10520,10030,10260,10690
,10720
29960 ON R1 GOTO 10750,10780,10810,10840,10940,11060,11230,10920,10950,
11140
29970 ON R1 GOTO 11200,11170,11310,11340,11360,11300,11400,11540,11660
,11470
29980 ON R1 GOTO 11420,11630,11450,11730,11760,11780,11800,11830,11860
,11880
29990 ON R1 GOTO 11900,11920,11950,11970,12000,12040,12070,12090,12120
10000 PRINT "WHAT DOES "SS" LOOK LIKE?"
10010 PRINT "DESCRIBE SIZE, WEIGHT, HEIGHT, MASS, ETC."
10020 GOTO 12150
10030 PRINT "BY "STATIC", I MEAN UNCHANGING, INERT, PERHAPS EVEN STAGN
ANT"
10040 PRINT "OR UNPROGRESSIVE."
10050 GOTO 12180
10060 PRINT "WHERE I WANT YOU TO DESCRIBE THOSE PROPERTIES WHICH ARE"
10070 PRINT "UNIQUE TO "SS"."
10080 GOTO 12210
10090 PRINT "ELEMENTS IS PERHAPS TOO GENERAL A TERM, BUT I WANT YOU TO
"
10100 PRINT "LIST THOSE FEATURES WHICH ARE LIMITED TO YOUR TOPIC,"
10110 PRINT "SS". WE ARE AFTER AN INSIDE DEFINITION."
10120 GOTO 12150
10130 PRINT "MAINLY, I WANT YOU TO DESCRIBE "SS" AS"
10140 PRINT "A CLOSED SYSTEM--IMPRISONED, CONFINED,"
10150 GOTO 12180
10160 PRINT "I'M THINKING ABOUT A PUZZLE, NOT CORN (MAIZE). NOW IS"
10170 PRINT "SS" PUZZLING, TRAPPED IN A MAZE."
10180 GOTO 12210
10190 PRINT "NOW IS "SS" SEPARATED FROM A"
10200 PRINT "CLOSED GROUP. ALSO WHAT PREVENTS ITS ENTRY?"
10210 GOTO 12150
10220 PRINT "CONSIDER QUESTIONS OF EXISTENCE, ETHICS, INTELLECTUAL MAT
TERS,"
10230 PRINT "OR REASONING PRINCIPLES."
10240 GOTO 12180
10250 PRINT "CONSIDER THOSE CHARACTERISTICS OF "SS
10260 PRINT "WHICH AFFECT SOCIETY IN GENERAL. SOCIAL EVIL?"
10270 PRINT "SOCIAL CLASS? COMMUNITY CONCERNS?"
10280 GOTO 12210
10290 PRINT "GENERALLY, I'M THINKING ABOUT ELEMENTS OF TENSION IN"
10300 PRINT "SS". YOU CAN BE SPECIFIC IF YOU LIKE."
10310 GOTO 12150
10320 PRINT "CULTURAL REFERS TO EITHER (1) CIVILIZATIONS, OR (2) MATTE
RS"
10330 PRINT "CONSIDERED TO BE EDUCATIONAL. YOU CAN PROBABLY ADD ANOTH
ER"
10340 PRINT "DEFINITION."

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10350 GOTO 12180
10360 PRINT "AN ANSWER HERE MAY TAKE SOME IMAGINATION. IT COULD"
10370 PRINT "REFER TO THE INTANGIBLE, UNREAL, PERHAPS EVEN SUPERFICIAL"
"
10380 PRINT "ASPECTS OF 'SS'."
10390 GOTO 12210
10400 PRINT "WHAT IN THE PAST HELPED 'SS'?"
10410 GOTO 12150
10420 PRINT "FIRST, THINK OF A TOPIC LIKE YOURS. SECOND, DESCRIBE"
10430 PRINT "WHY 'SS' IS DIFFERENT."
10440 GOTO 12180
10450 PRINT "BY 'REMAIN THE SAME.' I MEAN THOSE THINGS ABOUT"
10460 PRINT "SS" THAT DO NOT CHANGE."
10470 PRINT
10480 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT COMPUTER ELECTRONICS
--"
10490 PRINT "A SUBJECT NEAR TO MY HEART--I COULD WRITE HERE A DEFINITI
ON"
10500 PRINT "OF 'SOLID STATE'."
10510 GOTO 12210
10520 PRINT "I'M THINKING ABOUT A PHOTOGRAPHIC DESCRIPTION HERE--"
10530 PRINT "BUT NOT A MOVIE, RATHER A STILL PHOTO."
10540 GOTO 12150
10550 PRINT "IF I SAY 'SS' TO PEOPLE,"
10560 PRINT "WHAT IS THE FIRST THING THEY WOULD SEE IN THEIR MINDS?"
10570 PRINT
10580 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT COLLEGE ATHLETICS,"
10590 PRINT "I MIGHT FIRST THINK ABOUT FOOTBALL--RECRUITING, PUBLICITY
"
10600 PRINT "CHARACTER-BUILDING, BIG-TIME ENTERTAINMENT, ETC."
10610 GOTO 12180
10620 PRINT "CONCENTRATE NOW ON SEEING 'SS'."
10630 PRINT "WHAT FEATURE STANDS OUT THE MOST? DESCRIBE."
10640 PRINT
10650 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT UFO SIGHTINGS,"
10660 PRINT "I WOULD VISUALIZE ALIEN WORLDS AND STRANGE SAUCER-SHAPED"
10670 PRINT "SPACECRAFT. LOTS OF INTERESTING DETAILS IN SUCH A TOPIC.
"
10680 GOTO 12210
10690 PRINT "I AM TRYING TO GET YOU TO EXPLAIN WHY SOME FEATURES OF"
10700 PRINT "SS" ARE MORE IMPORTANT THAN OTHERS."
10710 GOTO 12150
10720 PRINT "I AM LOOKING FOR A LIST OF CRUCIAL FEATURES WHICH MIGHT"
10730 PRINT "HELP YOU ORGANIZE YOUR PAPER. AN IMPORTANT QUESTION!!"
10740 GOTO 12180
10750 PRINT "PERHAPS A CONDITION OF 'SS' MAKES"
10760 PRINT "IT UNIQUE. IF SO, DESCRIBE."
10770 GOTO 12210
10780 PRINT "WHERE IS 'SS' FOUND? ON OUR PLANET?"
10790 PRINT "IN THE MIND? IN THE UNIVERSE? IN THE U.S. OF A?"
10800 GOTO 12150
10810 PRINT "COULD MONEY BE CONSIDERED A FEATURE OF 'SS'?"
10820 PRINT "HOW SO? EXPLAIN."
10830 GOTO 12180
10840 PRINT "LOOKING FOR YOUR NOTIONS ABOUT THE DEVELOPMENT OF"
10850 PRINT "SS". . . ."
10860 PRINT
10870 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT HUMAN DEVELOPMENT,"
10880 PRINT "I WOULD WRITE ABOUT GROWTH, CHANGES DUE TO MATURING--"

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10990 PRINT "ADULT 'PASSAGES' HAVE BEEN POPULAR FARE LATELY,"
10991 X(24)=1
10992 GOTO 12210
10993 PRINT "I'M WONDERING HERE ABOUT THE RELATIVE SPEED OF CHANGE."
10994 PRINT "WHAT DOES PROGRESS MEAN TO 'SS'?"
10995 GOTO 12150
10996 PRINT "LIKE PEOPLE? LIKE DISEASE? LIKE TIME? LIKE GROWTH?"
10997 PRINT "LIKE MATURITY? LIKE PROGRESS?"
10998 GOTO 12180
10999 PRINT "BY 'DYNAMIC', I MEAN THE TENDENCY FOR 'SS'
11000 PRINT "TO CHANGE. WHAT ENERGIZES 'SS'?"
11001 PRINT
11002 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT WOMEN IN POLITICS,"
11003 PRINT "I WOULD THINK ABOUT PARTICULAR POLITICAL ORGANIZATIONS LI
11004 KE"
11005 PRINT "N.O.W. MEY, WHAT ABOUT THE EQUAL RIGHTS AMENDMENT?"
11006 X(25)=1
11007 GOTO 12210
11008 PRINT "I WANT YOU TO BREAK DOWN 'SS' AND"
11009 PRINT "EXAMINE ITS ORGANIC DEVELOPMENT."
11010 PRINT
11011 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT INFLATION,"
11012 PRINT "THE ROOTS MIGHT BE GREED; THE TRUNK MIGHT BE THE AMERICAN
11013 "
11014 PRINT "FREE ENTERPRISE SYSTEM; AND BLOSSOMS MIGHT BE FOOD PRICES
11015 "
11016 X(26)=1
11017 GOTO 12150
11018 PRINT "YOU SHOULD SEE THE ANSWERS I GET TO THIS. WOW!!!"
11019 PRINT "I'M AFTER A CREATIVE GUESS."
11020 GOTO 12180
11021 PRINT "YOU KNOW--FROM CHRYSALIS TO BUTTERFLY, A SORT OF"
11022 PRINT "METAMORPHOSIS."
11023 GOTO 12210
11024 PRINT "I GUESS I AM THINKING OF A CHEMICAL EXPERIMENT WITH"
11025 PRINT "SS" AS A CATALYTIC AGENT."
11026 GOTO 12150
11027 PRINT "IN OTHER WORDS, WHAT WOULD MAKE 'SS'
11028 PRINT "MORE CONVINCING?"
11029 PRINT
11030 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT DREAM INTERPRETATION
11031 "
11032 PRINT "I WOULD ARGUE THAT A GREATER UNDERSTANDING OF JUNG'S PSYC
11033 HOLOGY"
11034 PRINT "WOULD HELP MY AUDIENCE UNDERSTAND THE UNCONSCIOUS SELF."
11035 X(27)=1
11036 GOTO 12180
11037 PRINT "IN OTHER WORDS, HOW DOES ONE ACTION OF "
11038 PRINT "SS" TRIGGER A REACTION? "
11039 GOTO 12210
11040 PRINT "DOES 'SS' HAVE EBB AND FLOW? A CYCLE?"
11041 GOTO 12150
11042 PRINT "IS 'SS' FOUND EVERYWHERE OR WHAT?"
11043 GOTO 12180
11044 PRINT "WHO IS MAINLY INTERESTED IN 'SS'?"
11045 GOTO 12210
11046 PRINT "WHERE IS MOST OF THE ACTION OF 'SS'?"
11047 GOTO 12150
11048 PRINT "A LARGE PROBLEM WITH MANY TOPICS! DESCRIBE THE "

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11430 PRINT "INTELLECTUAL DIMENSIONS OF "SS","
11440 GOTO 12180
11450 PRINT "IS THERE A SOLAR SYSTEM (SO TO SPEAK) OF "SS"?"
11460 GOTO 12210
11470 PRINT "WHAT GOES WHERE? DOES TIME OR SPACE MAKE MORE SENSE?"
11480 PRINT
11490 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT SCUBA DIVING,"
11500 PRINT "I COULD WRITE ABOUT THE EQUIPMENT CHECKS IN DIVE PLANNING
"
11510 PRINT "AND PLANNING THE DECOMPRESSION STOPS IN ADVANCE,"
11520 X(40)=1
11530 GOTO 12150
11540 PRINT "'CLASS' MEANS CATEGORIES OR CLASSIFICATIONS. BY THE WAY,
"
11550 PRINT "ANSWERING THIS QUESTION MAY HELP YOU DETERMINE THE MOST"
11560 PRINT "APPROPRIATE MODE FOR YOUR PAPER,"
11570 PRINT
11580 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT THE DEPRESSION,"
11590 PRINT "I WOULD BE QUITE CONCERNED ABOUT TIME; MOST HISTORICAL"
11600 PRINT "TOPICS ARE CONCERNED WITH TIME,"
11610 X(38)=1
11620 GOTO 12180
11630 PRINT "TIME? SPACE? CAUSE-EFFECT? COMPARISON-CONTRAST?"
11640 PRINT "GENERAL-SPECIFIC? SPECIFIC-GENERAL?"
11650 GOTO 12210
11660 PRINT "WHAT FORCES KEEP "SS" IN PLACE?"
11670 PRINT
11680 PRINT "FOR EXAMPLE, IF I WERE WRITING ABOUT SOLAR ENERGY,"
11690 PRINT "I WOULD VISUALIZE SOLAR ENERGY ORBITING EARTH'S DIMINISHI
NG"
11700 PRINT "ENERGY RESOURCES, SUCH AS GAS, COAL, ETC."
11710 X(39)=1
11720 GOTO 12150
11730 PRINT "YEAH, "NIS", THOUGHT YOU WOULD ASK. I DON'T HAVE"
11740 PRINT "ANY IDEA. I WAS JUST ASKING WHAT YOU THOUGHT, ANYTHING?"
"
11750 GOTO 12150
11760 PRINT "WHERE DOES "SS" FIT INTO THE LARGER SYSTEM?"
11770 GOTO 12210
11780 PRINT "IS THERE A FORMULA TO FOLLOW, LIKE MY ALGORITHMS? DESCRIB
E."
11790 GOTO 12150
11800 PRINT "AN ANALOGY OF THE 'FIELD' PERSPECTIVE--HOW IS"
11810 PRINT "SS" LIKE A PLAN FOR SOMETHING?"
11820 GOTO 12180
11830 PRINT "WHAT IS THE HEART OF "SS"? THE ARTERIES?"
11840 PRINT "THE VEINS? DON'T FORGET THE FUNCTIONS INVOLVED."
11850 GOTO 12210
11860 PRINT "9000000000!!! OUCH!!! HIT THE FLOOR!!!"
11870 GOTO 12150
11880 PRINT "DESCRIBE THE BLUE OF "SS","
11890 GOTO 12180
11900 PRINT "ITS EFFECT ON PEOPLE? THE WAY IT WORKS? THE PEOPLE INVOL
VED?"
11910 GOTO 12210
11920 PRINT "AN EVALUATION, SURE, BUT IT MAY HELP YOU SEE"
11930 PRINT "SS" IN A NEW LIGHT,"
11940 GOTO 12150
11950 PRINT "WHAT DO "SS" AND POWER HAVE IN COMMON?"
11960 GOTO 12180

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11970 PRINT "A MIND-BREAKER. ISN'T IT? LOOKING FOR AN INSIGHT ON"
11980 PRINT "THE INSIDE."
11990 GOTO 12210
12000 PRINT "X ----- "SS" ----- Y"
12010 PRINT
12020 PRINT "DESCRIBE X AND Y."
12030 GOTO 12150
12040 PRINT "LIKE PANCAKES? LIKE A DECK OF CARDS? LIKE A GEOGRAPHICA
L"
12050 PRINT "SURVEY?"
12060 GOTO 12180
12070 PRINT "THE CHILD IS THE PARENT PERSON OF THE PERSON PERSON."
12080 GOTO 12210
12090 PRINT "ARE THERE SEASONAL CHARACTERISTICS ABOUT "
12100 PRINT "SS"--BIRTH, YOUTH, MATURITY, DEATH?"
12110 GOTO 12150
12120 PRINT "A CATEGORY OF THOUGHT ABOUT "SS
12130 PRINT "WOULD BE CALLED ----- DESCRIBE."
12140 GOTO 12180
12150 PRINT "PROMPTERS AFTER CLARIFICATION"
12160 PRINT "TRY ANSWERING THIS QUESTION NOW."
12170 GOTO 7040
12180 PRINT
12190 PRINT "WHAT ARE YOU THINKING, "N13"?"
12200 GOTO 7040
12210 PRINT
12220 PRINT,"YOUR TURN, "N13","
12230 GOTO 7040
12240 PRINT "THAT'S ABOUT ALL I CAN ADD AT THE MOMENT. SORRY,"
12250 GOTO 12180
12260 REM <<< CLOSINGS >>>
12270 IF C<3 THEN 12590
12280 IF C<7 THEN 12520
12290 PRINT
12300 PRINT
12310 PRINT " YOU EXPLORED "E3" OF THE "C" QUESTIONS I ASKED."
12320 PRINT "BUT YOU ARE NOT FINISHED INVENTING YET, "N13"!"
12330 PRINT "IN THE LANGUAGE OF A COGNITIVE PSYCHOLOGIST, YOU ARE JUST
"
12340 PRINT "BEGINNING THE 'INCUBATION' STAGE, YOUR IDEAS NEED"
12350 PRINT "TO SIMMER NOW."
12360 PRINT
12370 PRINT,"I HOPE YOU NOW CAN ASK YOUR OWN QUESTIONS"
12380 PRINT "FROM THE PERSPECTIVES OF PARTICLE, WAVE, AND FIELD."
12390 PRINT
12400 PRINT,"AS A MATTER OF INTEREST, YOU WERE ASKED"
12410 PRINT "P8"PARTICLE QUESTIONS,"W8"WAVE QUESTIONS, AND"F8"FIELD"
12420 PRINT "QUESTIONS."
12430 PRINT
12440 PRINT,"FINALLY, I HOPE YOUR PAPER ON "SS
12450 PRINT "IS AS SYSTEMATICALLY ORGANIZED AND POLISHED AS IT WAS"
12460 PRINT "SYSTEMATICALLY THOUGHT ABOUT TODAY."
12470 PRINT
12480 PRINT,"CORDIALLY,"
12490 PRINT
12500 PRINT,"A KINDRED CREATIVE SPIRIT"
12510 STOP
12520 PRINT
12530 PRINT
12540 PRINT "YOU MUST BE A DEEP THINKER, "N13","

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12550 PRINT
12560 PRINT "YOU ONLY WERE ASKED "C" QUESTIONS. PLEASE COME BACK"
12570 PRINT "WHEN YOU CAN STAY LONGER. BYE."
12580 STOP
12590 PRINT
12600 PRINT
12610 PRINT, "WHY, "NIS", YOU ARE IN A HURRY TODAY."
12620 PRINT
12630 PRINT, "YOU PROBABLY WILL HAVE TO SPEND MORE TIME"
12640 PRINT "THINKING ABOUT "SS",."
12650 PRINT
12660 PRINT, "SORRY I COULD NOT HELP YOU MORE. BYE."
12670 STOP
12680 END
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APPENDIX C: Runs

(CREATING BASIC.LOG)
>RUN

TOP01 15125 20-FEB-79

A COMPUTER-PROMPTED INVENTION PROGRAM:

ARISTOTLE'S TOPICS

HELLO AND WELCOME!

PLEASE TYPE IN YOUR FIRST NAME: WALT

NOW, WALT, PLEASE TYPE IN YOUR LAST NAME:

WELL, WALT, I HOPE I CAN BE OF SOME ASSISTANCE
TO YOU TODAY. IF WE TAKE EACH OTHER SERIOUSLY, YOU'LL
THINK ABOUT YOUR TOPIC AS YOU NEVER HAVE BEFORE.

BEFORE WE BEGIN, WALT, THERE'S AN OLD
SAYING ABOUT COMPUTER-ASSISTED INSTRUCTION. IT GOES:

'GARBAGE IN, GARBAGE OUT!'

IN OTHER WORDS, YOU AND I MUST WORK TOGETHER SO
YOU CAN GET A GOOD START ON YOUR RESEARCH PAPER.

(PRESS 'RETURN' TO CONTINUE.)

WOULD YOU LIKE TO REVIEW THE DIRECTIONS AND THE COMMANDS?
(YES OR NO?)

YES

DIRECTIONS:

1. WHEN YOU MAKE A TYPING ERROR, WALT, AND
WISH TO CORRECT IT, USE THE 'RUBOUT' OR 'RUB' KEY.
THE 'SHIFT' MUST BE DEPRESSSED WHEN YOU 'RUBOUT'.
IT MAY LOOK A LITTLE FUNNY (LIKE WRITING BACKWARDS),
BUT DON'T WORRY: IT WORKS THAT WAY.

2. REMEMBER THAT I CAN ONLY READ ABOUT A LINE AND
A HALF OF INFORMATION AT ONE TIME -- ABOUT THIS MUCH:

HIT 'RETURN' AT THAT POINT AND I'LL GENERALLY
LET YOU ADD MORE INFORMATION. IF THAT DOES NOT WORK,
TYPE '66' AND I'LL SAY 'GO ON, WALT.'

(PRESS 'RETURN' TO CONTINUE.)

3. AFTER YOU FINISH TYPING YOUR RESPONSE, YOU MUST PRESS
THE 'RETURN' KEY. WHEN YOU DO, I'LL READ YOUR
RESPONSE AND SAY SOMETHING BACK TO YOU.

4. THE MOST IMPORTANT OBJECTIVE OF THIS PROGRAM
IS TO GET YOU THINKING ABOUT YOUR TOPIC.

IN ORDER TO ACHIEVE THIS OBJECTIVE,
YOU ARE GOING TO HAVE TO FORGET THAT I AM A MACHINE.

PLEASE ASK QUESTIONS. YOU'LL BE SURPRISED BY HOW MUCH
I KNOW (UP SO I HOPE!) I'M NOT
GUARANTEEING THE TRUTH, BUT I'LL DO THE BEST I CAN.
MY MEMORY IS STILL DEVELOPING.

(HIT 'RETURN' TO CONTINUE.)

COMMANDS:

TYPE IN-->	I'LL DO THIS-->
-----	-----
STOP!	I'LL STOP ASKING QUESTIONS AND CLOSE.
CONTINUE!	I'LL SKIP AHEAD TO THE NEXT QUESTION.
REPEAT!	I'LL REPEAT THE QUESTION.
DIRECTIONS!	I'LL SHOW YOU THESE DIRECTIONS AGAIN.
CHANGE!	I'LL LET YOU CHANGE OR NARROW YOUR SUBJECT.
?	I'LL LET YOU ASK A QUESTION.
EXPLAIN!	I'LL EXPLAIN THE QUESTION. (THIS ONE IS A LOT OF FUN. *ALT.)
66	I'LL LET YOU CONTINUE WITH YOUR RESPONSE.

(PRESS 'RETURN' TO CONTINUE.)

TWO LAST THINGS:

*** THINK OF ME AS A PERSON WHO CAN ASK A LOT OF INTERESTING, THOUGHT-PROVOKING, AND WILD QUESTIONS.

*** SCREAM FOR HELP IF I START ACTING REALLY CRAZY!!

WOULD YOU LIKE A BRIEF EXPLANATION OF HOW
ARISTOTLE'S TOPICS HELP WRITERS WRITE?
(YES OR NO?)

YES

I'M GLAD YOU ASKED, WALT. BRIEFLY, THE TWENTY-EIGHT
ENTHYME TOPICS HELP A WRITER (OR A SPEAKER) DISCOVER
SPECIFIC ARGUMENTS ABOUT SUBJECTS.

IN HIS 'RHETORIC', ARISTOTLE TELLS US THAT THE AIM OR GOAL
OF RHETORIC IS TO PERSUADE AN AUDIENCE. REMEMBER THAT TERM --
PERSUADE.

ARISTOTLE BELIEVED THAT IF HIS STUDENTS IN THE
ACADEMY KNEW AND PRACTICED USING THE TOPICS, THEY WOULD BECOME
EFFECTIVE 'PERSUADERS.'

YOU'LL RECOGNIZE AMONG THE TOPICS:

1. QUESTIONS OF DEFINITION;
2. QUESTIONS ABOUT CAUSES AND EFFECTS;
3. QUESTIONS REGARDING OPPOSITES AND ASSOCIATIONS;
4. QUESTIONS ABOUT CONSEQUENCES;
5. AND QUESTIONS ABOUT MATTERS OF FACT AND OPINION.

(HIT 'RETURN' TO CONTINUE.)

NOW I NEED TO FIND OUT WHAT YOU
ARE WRITING ABOUT, SO WOULD YOU PLEASE TYPE IN YOUR
SUBJECT. I AM LOOKING FOR ONE TO THREE WORDS.

FEAR OF DEATH

HOLY ELECTRONICS! THAT'S WEIRD, I USED TO DATE A COMPUTER INTERESTED IN FEAR OF DEATH.

A COMMENT ABOUT PURPOSE:

DURING THIS EXPLORATION PROCESS, YOU WILL BE ASKED TO CLARIFY THE PURPOSE OF YOUR PAPER ON FEAR OF DEATH.

SO NOW WOULD YOU BRIEFLY DESCRIBE WHAT THE PURPOSE OF YOUR PAPER BY COMPLETING THIS STATEMENT: THE PURPOSE OF THIS PAPER IS TO. . .

EXAMINE THE FEAR OF DEATH PEOPLE HAVE, WHERE WE GET THOSE FEARS , AND HOW WE MAY REDUCE THOSE FEARS

FINE, WALT, YOU AND I WILL TALK AGAIN ABOUT YOUR PURPOSE.

RELAX NOW, WALT, AND ENJOY THIS BRAINSTORMING SESSION.

WHAT OBJECTS DO YOU ASSOCIATE WITH FEAR OF DEATH? HOW MIGHT THEY BE INCLUDED IN YOUR THEME?

FEAR OF THE UNKNOWN, CESSATION OF LIFE, FEAR OF CAUSING PAIN TO OUR LOVED ONES

THAT'S THE IDEA, WALT. GIVE ME SOME MORE INFO NOW.

PAIN IS ANOTHER FEAR CAUSER. KNOWING WE HAVE TO DIE DOES NOT RELIEVE
THE PAIN/FEAR OF DYING

SUPER, WALT!

ANYTHING ELSE?
(YOU CAN ADD MORE INFO, ASK A
QUESTION, OR GIVE A COMMAND --
WHATEVER YOU WISH.)

HOW DOES EUTHANASIA, MERCY KILLING, SUICIDE, MURDER AND ACCIDENTAL DEATH
ADD TO OUR FEARS?

I COULD SAY THAT THAT'S FOR ME TO KNOW AND FOR YOU TO FIND OUT.

SERIOUSLY, I CANNOT PRETEND TO KNOW 'HOW', BUT YOU
SHOULD KEEP EXPLORING FOR AN ANSWER.

CONTINUE!

(TRY EXPLAINING A LITTLE MORE. LESS PHRASES, MORE SENTENCES.)

WE'RE MOVING RIGHT ALONG. HERE IS QUESTION 2.

WHAT COULD BE CONSIDERED A RESULT
OF FEAR OF DEATH?

NERVOUSNESS, DEPRESSION, SUICIDAL TENDENCIES

BY GEORGE, WALT, GOOD ONE. WRITE A LITTLE MORE PLEASE.

HATRED FOR THE PERSON WHO CAUSED THE DEATH, OR THE PERSON WHO DIED

FANTASTIC, WALT!

ANYTHING ELSE?
(YOU CAN ADD MORE INFO, ASK A
QUESTION, OR GIVE A COMMAND --
WHATEVER YOU WISH.)

CONTINUE!

JRAY.

DO YOU WISH TO NARROW OR CHANGE YOUR SUBJECT?
(MAYBE REVISE THE WAY IT SOUNDS IN THESE QUESTIONS?)
(YES OR NO?)
NO

(IF YOU NEED MORE ROOM, TYPE "44" AT THE END OF A LINE.)

HERE IS QUESTION 3, WALT.

WHAT HAS BEEN DECIDED ABOUT FEAR OF DEATH
TO DATE.

EXPLAIN:

DECISIONS HAVE BEEN MADE ABOUT FEAR OF DEATH.
WHAT WERE THEY ABOUT? WHO MADE THEM?

FOR EXAMPLE, IF I WERE WRITING A PAPER ABOUT INFLATION,
I WOULD WANT TO WRITE A PARAGRAPH OR TWO ABOUT THE
GOVERNMENT'S LEGISLATION TO DATE.

TRY ANSWERING THIS QUESTION NOW.

CALIFORNIA HAS A NATURAL DEATH ACT WHICH ALLOWS PEOPLE TO DECIDE IF THEY
ARE TO BE TAKEN OFF A LIFE 44

GO ON, WALT.

SUPPORTING MACHINE

GOOD, WALT, ADD TO YOUR RESPONSE NOW.

PEOPLE HAVE HAD VARIOUS ORGANS TRANSPLANTED INTO THEM

OUTSTANDING, WALT:

YES, BUT I WANT YOU TO REPEAT
WHAT?

THE LAST QUESTION

AD-A106 372

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH F/8 5/9
STIMULATING RHETORICAL INVENTION IN ENGLISH COMPOSITION THROUGH--ETC(U)
AUG 79 H L BURNS
AFIT-CI-79-2230

F/O 5/9
DUSH--ETC(U)

NL

4-4

60622

END

DATE _____

FILMED
12-9

12. 8

DTIC

FANTASTIC, HALT!

ANYTHING ELSE?

REPEAT!

WHAT HAS BEEN DECIDED ABOUT FEAR OF DEATH
TO DATE.

RAPEN AND QUINLEN HAS TAKEN OFF LIFE SUPPORT EQUIPMENT TO DIE TO RELIEVE HER
FAMILY OF THE PAIN OF LL

GO ON, HALT.

PROLONGING THE LIFE OF A VEGATABLE

ORAT.

(IF YOU DON'T UNDERSTAND, JUST SAY SO NEXT TIME. I'LL HELP.)

QUESTION 4 -- ONE OF MY ALL-TIME FAVORITES COMING UP.

DEFINE FEAR OF DEATH.

FEAR OF THE UNKNOWN, FEAR OF A NEW , DIFFERENT KIND OF LIFE. FEAR OF THE PAIN
OF DYING, AND FEAR OF LOSINGLL

GO ON, HALT.

OUR IMMORTALITY

AND, HALT, ADD TO YOUR RESPONSE NOW.

NOT UNDERSTANDING WHY MOMMY OR DADDY IS NO LONGER WITH US IS SOMETHING WE
OFTEN FIND HARD TO COPE WITH

SUPER, HALT!

ANYTHING ELSE?

YES, FEAR OF DYING IN UNUSUAL CIRCUMSTANCES, AND WHERE WE DON'T KNOW THOSE
AROUND IS AND THAT DON'T KNOW LL

WHAT?

EXPLAIN!

YOU MIGHT SPEND ALL DAY ON THIS QUESTION, BUT I AM
AFTER A SHORT DEFINITION. IN LESS THAN TWENTY WORDS,
WHAT IS FEAR OF DEATH?

YOUR TURN, HALT.

FEAR OF THE UNKNOWN

FANTASTIC, HALT!

ANYTHING ELSE?

FEAR OF PAIN

OKAY.

(SEE IF YOU CAN USE SOME MORE ACTION VERBS IN YOUR RESPONSE.)

AND HERE COMES A REALLY INTERESTING QUESTION -- NUMBER 5 .

WHAT COULD BE CONSIDERED A CAUSE
OF FEAR OF DEATH?

NOT BEING EXPOSED TO DEATH PROPERLY WHEN WE FIRST EXPERIENCE IT

GOOD, HALT, ADD TO YOUR RESPONSE NOW.

SEEING SOMEONE DIE IN A TRAGIC ACCIDENT

SUPER, HALT!

ANYTHING ELSE?

NOT BEING WITH OUR LOVED ONES TO PLAY WITH THEM AND GO THE PLACES WHERE WE ENJOYED
OURSELVES

WHAT?

EXPLAIN!

THIS QUESTION IS ABOUT CAUSES AND EFFECTS, BUT YOUR ANSWER
SHOULD JUST MENTION THE CAUSES, THE REASONS,
THE "WHYS" REGARDING FEAR OF DEATH.

FOR EXAMPLE, IF I WERE WRITING ABOUT HUMAN RIGHTS PROGRAMS,
I WOULD WRITE SOMETHING ABOUT THE
OUTRAGES OF RACISM OUR WORLD HAS WITNESSED.

TRY ANSWERING THIS QUESTION NOW.

BEING AFRAID OF LEAVING OUR FRIENDS IS A VALID CAUSE OF FEARING DEATH I THINK.

WUNT YOU?

YES, THAT SEEMS OKAY.

YOUR TURN, HALT.

CONTINUE!

BEFORE WE CONTINUE, WALT, I WANT YOU
TO THINK ABOUT YOUR PURPOSE ONCE AGAIN.

YOU HAVE ALREADY TOLD ME THAT YOUR PURPOSE WAS
TO EXAMINE THE FEAR OF DEATH PEOPLE HAVE, WHERE WE GET THOSE FEARS, AND
HOW WE MAY REDUCE THOSE FEARS.

NOW WOULD YOU COMPLETE THIS STATEMENT:

IF NOTHING ELSE, I WANT MY READER TO UNDERSTAND. . . .

DEATH IS NOT TO BE FEARED. IT IS A FACT OF LIFE AND SHOULD BE DEALT WITH IN THAT CONTEXT
ORAY, FINE. KEEP YOUR PURPOSE IN MIND AS WE CONTINUE.

HERE IS YOUR NEXT QUESTION -- NUMBER 6 .

WHAT SPECIAL EXPERIENCES MADE YOU SELECT
FEAR OF DEATH AS YOUR TOPIC?

RELIGIOUS EDUCATION CONFERENCE WHERE A NUN FROM SETON HOSPITAL GAVE A TALK TO MY STUDENTS

THAT'S THE IDEA, WALT. GIVE ME SOME MORE INFO NOW.

I HAVE WONDERED WHY PEOPLE HAVE SUCH A FEAR OF WHAT THEY DONT KNOW AND CANT DO SOMETHING
ABOUT, LIKE MY FEAR 66
GO ON, WALT.

OF SINKING

OUTSTANDING, WALT!

ANYTHING ELSE?
DEALING WITH OTHERS IN THE FUTURE WHEN THEY LOSE A LOVED ONE WILL BE MUCH EASIER IF I
UNDERSTAND WHAT THEIR FEARS 66
GO ON, WALT.

ARE

ORAY.

!! REPEAT QUESTIONS IF YOU TYPE 'REPEAT!!'

HERE IS QUESTION 7 , WALT.

WHAT STILL MUST BE DECIDED ABOUT
FEAR OF DEATH? DESCRIBE.

CONTINUE:

DO YOU WISH TO NARROW OR CHANGE YOUR SUBJECT?
(MAYBE REVISE THE WAY IT SOUNDS IN THESE QUESTIONS?)
(YES OR NO?)

NO

(TRY USING SOME MORE VERBS FOR BETTER EXPLANATIONS.)

QUESTION 8 -- ONE OF MY ALL-TIME FAVORITES COMING UP.

FILL IN THE BLANK: IF FEAR OF DEATH,
THEN _____.

STOP:

YOU EXPLORED 8 QUESTIONS OUT OF THE 8 I ASKED.
THAT'S 100 PERCENT.

LET ME REMIND YOU THAT YOU ARE STILL IN THE FIRST STAGES
OF THE CREATIVE PROCESS. THESE IDEAS MUST SIMMER NOW.

ALSO, I HOPE YOU CAN CREATE SOME OF YOUR OWN 'TOPIC'
QUESTIONS. I WON'T ALWAYS BE AROUND TO HELP!!!

HOPE YOUR PAPER IS TERRIFIC!

GOOD BYE & GOOD LUCK!

TIME: 27.90 SECS.
>MULUG
(CLOSING BASIC.LOG)

(CREATING BASIC.LOG)
>RUN

BURKE 14142 20-FEB-79

A COMPUTER-ASSISTED INVENTION PROGRAM:

BURKE'S DRAMATISTIC PENTAD

GREETINGS! WELCOME TO CAI-PROMPTED INVENTION.

PLEASE TYPE IN YOUR FIRST NAME: ROBYN

NOW, ROBYN, PLEASE TYPE IN YOUR LAST NAME:

THANK YOU, ROBYN . I HOPE I CAN BE OF SOME
ASSISTANCE TO YOU TODAY. IF WE TAKE EACH OTHER SERIOUSLY,
I KNOW YOU'LL THINK ABOUT YOUR TOPIC AS YOU NEVER HAVE BEFORE.

BEFORE WE BEGIN, ROBYN, THERE'S AN OLD
SAYING ABOUT COMPUTER-ASSISTED INSTRUCTION. IT GOES:

'GARBAGE IN, GARBAGE OUT!'

IN OTHER WORDS, YOU AND I HAVE GOT TO WORK TOGETHER SO
YOU CAN GET A GOOD START ON YOUR RESEARCH PAPER.

(PRESS 'RETURN' TO CONTINUE.)

WOULD YOU LIKE TO REVIEW THE DIRECTIONS AND COMMANDS?
(YES OR NO?)

NO

WOULD YOU LIKE TO REVIEW KENNETH BURKE'S PENTAD?
(YES OR NO?)

NO

NOW I NEED TO FIND OUT WHAT YOU
ARE WRITING ABOUT, SO WOULD YOU PLEASE TYPE IN YOUR
SUBJECT. I AM LOOKING FOR ONE TO THREE WORDS.

SEX DIFFERENCES

BE SURE TO ASK THE REFERENCE LIBRARIAN ABOUT THE RECENT
RESEARCH ON SEX DIFFERENCES. YOU'LL BE
WELL-REWARDED.

(HIT 'RETURN' TO CONTINUE.)

A COMMENT ABOUT YOUR PURPOSE:

DURING THIS EXPLORATION PROCESS,
YOU WILL BE ASKED TO CLARIFY THE PURPOSE OF
YOUR PAPER ON SEX DIFFERENCES.

SO NOW WOULD YOU BRIEFLY DESCRIBE THE PURPOSE
OF YOUR PAPER BY COMPLETING THIS STATEMENT:

THE PURPOSE OF MY PAPER IS TO. . . .

TO ESTABLISH WHETHER DIFFERENCES REALLY EXIST BETWEEN MEN AND WOMEN

FINE, ROBYN, YOU AND I WILL TALK AGAIN ABOUT YOUR
PURPOSE.

RELAX NOW, ROBYN, AND ENJOY THIS EXPLORATION OF
SEX DIFFERENCES.

WHAT SOLUTIONS COULD YOU RECOMMEND FOR ANY PROBLEMS
CAUSED BY SEX DIFFERENCES?

DIFFERENT TEACHING METHODS FOR DIFFERENT CHILDREN.

THAT'S THE IDEA, ROBYN. GIVE ME SOME MORE INFO NOW.

THE WHOLE MODERN DAY PROBLEM OF DISCRIMINATION

GREAT, ROBYN!

ANYTHING ELSE?
(YOU CAN ADD MORE INFO, ASK A
QUESTION, OR GIVE A COMMAND --
WHATEVER YOU WISH.)

NO

OKAY.

(USE GOOD, STRONG, ACTION VERBS WHEN YOU CAN.)

HERE IS QUESTION 2, ROBYN.

WHO ESPECIALLY CARES ABOUT SEX DIFFERENCES?
EXPLAIN THEIR REASONS.

ALL PEOPLE, BOTH MEN AND WOMEN SHOULD CARE ABOUT SEX DIFFERENCES, BECAUSE THEY ARE

GO ON, ROBYN.

ARE ALL A PART OF IT.

FINE, ROBYN. WRITE SOME MORE.

CONTINUE!

DO YOU WISH TO CHANGE OR NARROW YOUR SUBJECT?
(YES OR NO?)

NO

AND HERE COMES A REALLY INTERESTING QUESTION--NUMBER 3.

DESCRIBE SOCIETY'S ATTITUDE TOWARD
SEX DIFFERENCES.

THAT IS A QUESTION TO WHICH I DON'T KNOW THE ANSWER. THAT IS WHAT I'M TRYING TO FIND OUT

BY 'SOCIETY'S ATTITUDE' I MEAN WHAT DO
PEOPLE IN GENERAL THINK ABOUT SEX DIFFERENCES.

FOR EXAMPLE, IF I WERE WRITING ABOUT A CONTROVERSIAL
TOPIC (SAY 'ABORTION'), I WOULD WANT TO WRITE SOMETHING
ABOUT PEOPLE'S VARIED VIEWPOINTS.

WHAT ARE YOU THINKING NOW, ROBYN?

WELL, I GUESS THAT MEN THINK THAT THEY ARE THE SUPERIOR SEX AND WOMEN THEN IN

THAT'S THE IDEA, ROBYN. GIVE ME SOME MORE INFO NOW.

MEN TEND TO BE MORE MECHANICALLY INCLINED AND ARE INTERESTED IN THAT TYPE OF THING &&
GO ON, ROBYN.

WHEREAS WOMEN ARE THE MOTHERLY TYPE THAT LIKE TO CARE FOR CHILDREN ETC

GREAT, ROBYN!

ANYTHING ELSE?
(YOU CAN ADD MORE INFO, ASK A
QUESTION, OR GIVE A COMMAND --
WHATEVER YOU WISH.)

CONTINUE!

OKAY.

(IF YOU DON'T UNDERSTAND A QUESTION, JUST SAY SO. I'LL HELP.)

WE'RE MOVING RIGHT ALONG. HERE IS QUESTION 4 .
WHERE DOES SEX DIFFERENCES OCCUR? DESCRIBE.

I SEE THEM OCCURRING MOSTLY IN THE BIG ORGANIZATIONS -- SCHOOLS, WORK, SPORTS

BY GEORGE, ROBYN, GOOD ONE. WRITE A LITTLE MORE PLEASE.

LARGE ORGANIZATIONS HAVE A STRICT RULE SET AND WHEN THESE DON'T AGREE WITH MEN OR WOMENS GO
GO ON, ROBYN.

VIEWPOINTS, CONFLICT OCCURS

SUPER, ROBYN!

NO, I HADN'T THOUGHT ABOUT IT TOO MUCH

OKAY.

(I'LL EXPLAIN A QUESTION IF YOU TYPE 'EXPLAIN!')

QUESTION 5 --ONE OF MY ALL-TIME FAVORITES COMING UP.

DESCRIBE OR LIST WHAT OTHERS MAY NOT KNOW
ABOUT SEX DIFFERENCES.

MOST PEOPLE, INCLUDING MYSELF, UNDERSTAND , DON'T UNDERSTAND THE BIOLOGICAL FACTORS THAT
CONTROL
GO ON, ROBYN.

DON'T UNDERSTAND THE BIOLOGICAL FACTORS THAT CONTROL MENT AND WOMENS ACTIONS, EMOTIONS ETC

BY GEORGE, ROBYN, GOOD ONE. WRITE A LITTLE MORE PLEASE.

PEOPLE NEED TO KNOW HOW MUCH HEREDITY CONTROLS MOTIVATION , INTELLIGENCE, SPECIAL SKILLS

SUPER, ROBYN!

NO CONTINUE!

OKAY.

BEFORE WE CONTINUE, ROBYN, I WANT YOU
TO THINK ABOUT YOUR PURPOSE ONCE AGAIN.

YOU HAVE ALREADY TOLD ME THAT YOUR PURPOSE WAS
TO TO ESTABLISH WHETHER DIFFERENCES REALLY EXIST BETWEEN MEN AND WOMEN.

NOW HOW WOULD YOU COMPLETE THIS STATEMENT:

IF NOTHING ELSE, I WANT MY READER TO UNDERSTAND. . . .

THAT YES, DIFFERENCES DO EXIST, AND THAT THESE DIFFERENCES OUGHT TO BE IN OUR
OKAY, GOOD. KEEP PURPOSE IN MIND AS WE CONTINUE.

HERE IS YOUR NEXT QUESTION -- NUMBER 6 .

WHAT REASONS CAN YOU LIST FOR THE EXISTENCE
OF SEX DIFFERENCES?

BIOLOGICAL, HEREDITY, ENVIRONMENTAL, CULTURAL, AND OF COURSE, PLAIN DIFFERENCES

THAT'S THE IDEA, ROBYN. GIVE ME SOME MORE INFO NOW.

EXPLAIN!

WHY DOES SEX DIFFERENCES DEMAND OUR
ATTENTION IN THIS DAY AND AGE. WHAT REASONS CAN YOU
GIVE FOR THE IMPORTANCE OF YOUR TOPIC?

YOUR TURN, ROBYN.

IT IS A IMPORTANT TOPIC BECAUSE THE FACTOR OF DISCRIMINATION IS SO PREVALENT TODAY

I LIKE YOUR REASONING.
OUTSTANDING, ROBYN!

ANYTHING ELSE?

NO CONTINUE!

OKAY.

(IF YOU DON'T UNDERSTAND A QUESTION, JUST SAY SO. I'LL HELP.)

WE'RE MOVING RIGHT ALONG. HERE IS QUESTION 7 .

DOES EVERYONE AGREE THAT SEX DIFFERENCES HAS
THE SAME PURPOSE? EXPLAIN ANY DIFFERENCES.

EXPLAIN!

WHEN THERE IS A DISAGREEMENT ABOUT THE FINAL PURPOSE
OF A PARTICULAR ACTION, USUALLY NOT EVERYONE AGREES
ABOUT THE ULTIMATE PURPOSE. IF THERE ARE DIFFERENCES
ABOUT WHAT SHOULD HAPPEN, DESCRIBE THEM.
CERTAINLY, SEX DIFFERENCES IS SUCH A TOPIC.

WHAT ARE YOU THINKING NOW, ROBYN?

I STILL DONT TINK I UNDERSTAND PLEASE EXPLAIN!

THAT'S ABOUT ALL I CAN ADD AT THE MOMENT. SORRY!

WHAT ARE YOU THINKING NOW, ROBYN?

OKAY. I DNOT UNDERSTAND PLEASE CONTINUE!

DO YOU WISH TO CHANGE OR NARROW YOUR SUBJECT?
(YES OR NO?)
NO

QUESTION 9 --ONE OF MY ALL-TIME FAVORITES COMING UP.

IS THE SETTING AROUND SEX DIFFERENCES UNIQUE?
WHAT MAKES IT SO?

YES BECAUSE IT INVOLVES SO MANY PEOPLE -- ALL IN FACT

I LIKE YOUR REASONING.
GOOD, ROBIN. ADD TO YOUR RESPONSE NOW.

IT IS ALUS TOUCCHY BECAUSE PEOPLE GET OFFENCED WHEN YOU START TALKING ABOUT SOMETHING LL
GO ON, ROBYN.

SO BASIC IN THIER PERSONALITY

SUPER, ROBYN!

ANYTHING ELSE?

NO CONTINUE!

OKAY.

(USE GOOD, STRONG, ACTION VERRS WHEN YOU CAN.)

HERE IS QUESTION 9 , ROBYN.

HOW IS SEX DIFFERENCES LIKE MERCURY
IN A THERMOMETER? EXPLAIN.

EXPLAIN!

THIS ANALOGY IS ONE OF MANY I COULD HAVE ASKED YOU.
ONE WAY TO LOOK AT IT WOULD BE TO DESCRIBE HOW
SEX DIFFERENCES REACTS TO AND
MEASURES ITS SURROUNDINGS. YOU CAN PROBABLY THINK
OF ANOTHER INTERPRETATION AS WELL.

YOUR TURN, ROBYN.

SEX DIFFERENCES IS CONSTATNTLY AROUND, IMPOSING ON OUR LIVES, POSSIBLY THREATENING
SOME PEOPLE

GOOD, ROBYN. ADD TO YOUR RESPONSE NOW.

IT SEEMS THAT WE, AT LEAST IN AMERICA, ARE CONSTANTLY ANALYSING OUR ROLES IN OUR EVERYDAY
GO ON, ROBYN.

CHANGING SOCIETY. THERE SEEMS TO BE AN AMBIGUITY IN THESE ROLES

TERRIFIC, ROBYN!

ANYTHING ELSE?

NO CONTINUE!

OKAY.

(I'LL EXPLAIN A QUESTION IF YOU TYPE 'EXPLAIN!')

WE'RE MOVING RIGHT ALONG. HERE IS QUESTION 10 .

WHAT ECONOMIC OR POLITICAL CAUSES HELP CREATE
SEX DIFFERENCES? DESCRIBE.

IT IS ESTABLISHED IN OUR SOCIETY THAT THE WOMEN WORKS AT HOME AND THE MAN WORKS
AT THE OFFICE

GOOD, ROBYN. ADD TO YOUR RESPONSE NOW.

IT SEEMS THAT SOME OF OUR LAWS ARE STILL PURITANICAL IN REGARDS TO WOMEN'S RIGHTS

TERRIFIC, ROBYN!

ANYTHING ELSE?

TRYING IT ALL IN, IF A WOMEN IS ACCUSTOMED TO BEING SUPPORTED, AND HERE HUSBAND IS THE
SUPPORTER &&
GO ON, ROBYN.

THEN, WHEN AND IF SHE EVER LEFT HIM, THE LAWS AND SOCIETY WONT HELP HER
OKAY.

(REMEMBER COMMANDS NEED EXCLAMATION MARKS!! LIKE "REPEAT!"....)

AND HERE COMES A REALLY INTERESTING QUESTION--NUMBER 11 .

WHAT CAUSES SEX DIFFERENCES? EXPLAIN.

WE TALKED ABOUT THAT EARLIER. I DONT REALLY KNOW SINCE I HAVENT RESEARCHED IT YET &&
GO ON, ROBYN.

BIOLOGICAL FACTORS, HEREDITY, CULTURAL FACTORS.

BY GEORGE, ROBYN. GOOD ONE. WRITE A LITTLE MORE PLEASE.

ANOTHER REASON MIGHT BE MENS AND WOMENS ACTUAL ATTITUDES TOWARD THE OPPOSITE SEX

GREAT. ROBYN!

ANYTHING ELSE?

NO CONTINUE!

OKAY.

LET'S PAUSE ONCE AGAIN TO CONSIDER YOUR INTENT.

YOUR GENERAL PURPOSE IS TO
TO ESTABLISH WHETHER DIFFERENCES REALLY EXIST BETWEEN MEN AND WOMEN.

ALSO, YOU WANT YOUR READER TO UNDERSTAND
THAT IF, DIFFERENCES DO EXIST, AND THAT THESE DIFFERENCES OUGHT TO BE
IN OUR.

IS THERE ANYTHING ELSE YOU WISH TO SAY ABOUT YOUR PURPOSE?
(YES OR NO?)

YES. THIS PAPER IS INTENDED TO BE PERSUASIVE. TO SHOW THAT THE UNDERSTANDING THAT
SEX DIFFERENCES

GREAT, ROBYN, WHAT WOULD YOU LIKE TO ADD?

IS IMPORTANT IN THE WHOLE REALM OF HUMAN RELATIONS

OKAY, GOOD. KEEP PURPOSE IN MIND AS WE CONTINUE.

HERE IS YOUR NEXT QUESTION -- NUMBER 12 .

WHAT TOOLS, WEAPONS, INSTRUMENTS DO YOU NEED TO CHANGE
ATTITUDES ABOUT SEX DIFFERENCES? DESCRIBE.

STOP:

YOU EXPLORED 9 QUESTIONS IN THESE FEW MINUTES.
BUT YOU ARE NOT FINISHED INVENTING YET.

YOU ARE STILL IN THE FIRST STAGES
OF THE CREATIVE PROCESS. THE IDEAS YOU HAVE COME
UP WITH, ROBYN, NOW NEED TO SIMMER FOR A LITTLE
TIME.

I HOPE THAT YOU CAN NOW 'GENERATE' YOUR OWN QUESTIONS
FROM BURKE'S FIVE PERSPECTIVES. DON'T NEGLECT THE
RATIOS AS YOU WRITE YOUR PAPER.

I HOPE YOUR PAPER ON SEX DIFFERENCES
IS TERRIFIC.

GOOD BYE, ROBYN.

TIME: 36.10 SECS.
>NOLOG
(CLOSING BASIC.LOG)

(CREATING BASIC.LDS)
 *RUN

YAB: 16:20 20-FEB-79

A COMPUTER-ASSISTED INVENTION PROGRAM:

THE YABEMIC MATRIX

HI! WELCOME TO CAI-PROMPTED EXPLORATION.

PLEASE TYPE IN YOUR FIRST NAME: RICH

NOW, RICH, PLEASE TYPE IN YOUR LAST NAME:

THANK YOU, RICH. I HOPE I CAN BE OF SOME
 ASSISTANCE TO YOU TODAY. IF WE TAKE EACH OTHER SERIOUSLY,
 I KNOW YOU'LL THINK ABOUT YOUR TOPIC AS YOU NEVER HAVE BEFORE.

BEFORE WE BEGIN, RICH, THERE'S AN OLD
 SAYING ABOUT COMPUTER-ASSISTED INSTRUCTION. IT GOES:

'GARBAGE IN, GARBAGE OUT!'

IN OTHER WORDS, YOU AND I MUST COOPERATE SO THAT
 YOU CAN GET A GOOD START ON YOUR RESEARCH PAPER.

(PRESS 'RETURN' TO CONTINUE.)

WOULD YOU LIKE TO REVIEW THE DIRECTIONS AND THE COMMANDS?
 (YES OR NO?)
 NO

DO YOU WISH TO SEE A SHORT DESCRIPTION OF THE YABEMIC MATRIX?
 (YES OR NO?)
 YES

THE YABEMIC MATRIX HEURISTIC:

BRIEFLY, THE TACHENIC MATRIX ENCOURAGES A WRITER TO THINK ABOUT A TOPIC FROM NINE PERSPECTIVES.

FOR THIS PROGRAM, HOWEVER, I HAVE SIMPLIFIED THIS A BIT, THIS PROGRAM WILL ASK YOU QUESTIONS FROM ONLY THREE PERSPECTIVES, WHICH YOU WILL RECALL FROM OUR CLASS DISCUSSION.

1. PARTICLE -- VIEWING A SUBJECT IN ITSELF (STATIC)
2. WAVE -- VIEWING A SUBJECT AS IT CHANGES (DYNAMIC); AND
3. FIELD -- VIEWING A SUBJECT'S RELATIONSHIP TO OTHER SUBJECTS (IN A SYSTEM).

(HIT 'RETURN' TO CONTINUE.)

NOW I MUST ASK YOU WHAT YOU ARE WRITING ABOUT. SO WOULD YOU PLEASE TYPE IN YOUR SUBJECT, (I AM LOOKING FOR ONE TO THREE WORDS, MAYBE FOUR.)

COMPUTERS

HEY, THAT'S COOL, RICK! WE'LL HAVE A GOOD TIME BRAINSTORMING COMPUTERS.

(HIT 'RETURN' TO CONTINUE.)

A COMMENT ABOUT YOUR PURPOSE:

WRITING WITHOUT A PURPOSE OR AIM, RICK, IS
QUITE FRANKLY A WASTE OF TIME. DOING SO GENERATES VERBAL
POSS, DESTROYS WRITING EFFICIENCY, AND DEFEATS THE ESSENCE
OF COMMUNICATION.

THEREFORE, THROUGHOUT THIS EXPLORATION PROCESS,
YOU WILL BE ASKED TO WRITE ABOUT THE PURPOSE OF YOUR PAPER
ON COMPUTERS.

SO NOW WOULD YOU BRIEFLY DESCRIBE THE
PURPOSE OF YOUR PAPER BY COMPLETING THIS STATEMENT:
THE PURPOSE OF MY PAPER IS TO. . .

FIND THE ADVANTAGES AND DISADVANTAGES OF COMPUTERS

FINE, RICK, YOU AND I WILL TALK AGAIN ABOUT YOUR
PURPOSE.

HERE WE GO. RELAX AND ENJOY THE MIND-STRETCHING!

DESCRIBE HOW COMPUTERS PHYSICALLY CHANGES.

EXPLAIN!

LOOKING FOR YOUR NOTIONS ABOUT THE DEVELOPMENT OF
COMPUTERS. . .

FOR EXAMPLE, IF I WERE WRITING ABOUT HUMAN DEVELOPMENT,
I WOULD WRITE ABOUT GROWTH, CHANGES DUE TO MATURING--
ADULT 'PASSAGES' HAVE BEEN POPULAR FARE LATELY.

YOUR TURN, RICK.

NEW TECHNOLOGY AND ADVANCES IN HUMAN RESEARCH

GOOD, RICK. ADD TO YOUR RESPONSE NOW.

COMPUTERS CONSTANTLY BETTERING THE IDEAS OF MAN

TERRIFIC, RICH!

ANYTHING ELSE?
(YOU CAN ADD MORE INFO, ASK A
QUESTION, OR GIVE A COMMAND --
WHATEVER YOU WISH.)

CONTINUE!

O K A Y .

(REMEMBER COMMANDS NEED EXCLAMATION MARKS, LIKE 'REPEAT!')

QUESTION 2 -- ONE OF MY FAVORITES -- COMING UP.

HOW ARE THE CHUNKS OR COMPONENTS OF COMPUTERS
ORGANIZED IN RELATION TO ONE ANOTHER? DESCRIBE.

THE COMPUTER HAS A CENTRAL PROCESSOR WHICH IS THE CENTRAL CORE AND RUNS MOST OF THE
PROGRAMS

BY GEORGE, RICH, GOOD ONE. A LITTLE MORE PLEASE.

OTHER PARTS ARE MEMORY AND STORAGE DEVICES

TERRIFIC, RICH!

ANYTHING ELSE?
(YOU CAN ADD MORE INFO, ASK A
QUESTION, OR GIVE A COMMAND --
WHATEVER YOU WISH.)

CONTINUE!

O K A Y .

DO YOU WISH TO NARROW OR CHANGE YOUR SUBJECT?
MAYBE REVISE THE WAY IT SOUNDS IN THESE QUESTIONS?
(YES OR NOT)

NO

(ALL IDEAS ARE GOOD IDEAS! TYPE IN WHAT YOU THINK!!!)

HERE COMES AN INTERESTING ONE -- NUMBER 3 ,
WHAT FEATURES OF COMPUTERS REMAIN THE SAME
OVER TIME?

THEY KEEP MOST OF THE SAME INFO BUT ADD MORE LATER ON

THAT'S THE IDEA, RICK. GIVE ME SOME MORE INFO.

BUT INTERNAL PARTS ARE CHANGING ALL THE TIME FOR THE BETTER

TERRIFIC, RICK!

ANYTHING ELSE?

NO

O K A Y .

(AFTER THE NEXT QUESTION, TYPE 'WHAT?' AND I'LL DO MY THING.)

YOUR NEXT QUESTION IS NUMBER 4 .

TAKE A MENTAL PHOTOGRAPH OF COMPUTERS. DESCRIBE
ONE IMPORTANT DETAIL.

WHAT?

CONCENTRATE NOW ON SEEING COMPUTERS.
WHAT FEATURE STANDS OUT THE MOST? DESCRIBE.

FOR EXAMPLE, IF I WERE WRITING ABOUT UFO SIGHTINGS,
I WOULD VISUALIZE ALIEN WORLDS AND STRANGE SAUCER-SHAPED
SPACECRAFT. LOTS OF INTERESTING DETAILS IN SUCH A TOPIC.

YOUR TURN, RICK.

COMPUTERS BECOMING SMALLER AND SMALLER WITH MORE CAPABILITIES

GOOD, RICK. ADD TO YOUR RESPONSE NOW.

COMPUTERS BEING ABLE TO BE IN THE EVERY DAY HOME

TERRIFIC, RICK!

ANYTHING ELSE?

NO

O K A Y .

(USE SOME STRONG VERBS IN YOUR ANSWERS WHEN YOU CAN.)

LET'S SEE, NOW ABOUT QUESTION 5 NEXT, HERE YOU ARE,

WHAT IS THE MOST OUTSTANDING PHYSICAL FEATURE OF
COMPUTERS?

THEY ARE ABLE TO PRINT OUT MUCH INFO WITH GRAPHS AND CARDS AND PAPER

THAT'S THE IDEA, RICK, GIVE ME SOME MORE INFO,

THEY ARE ALSO GETTING MORE RELIABLE AND SMALLER AT THE SAME TIME

TERRIFIC, RICK!

ANYTHING ELSE?

NO

O K A Y .

BEFORE WE CONTINUE, RICK, I WANT YOU
TO THINK ABOUT YOUR PURPOSE ONCE AGAIN,

YOU HAVE ALREADY TOLD ME THAT YOUR PURPOSE WAS
TO FIND THE ADVANTAGES AND DISADVANTAGES OF COMPUTERS,

NOW HOW WOULD YOU COMPLETE THIS STATEMENT:

IF NOTHING ELSE, I WANT MY READER TO, . . .

UNDERSTAND THE COMPUTER MORE AND NOT BE AFRAID OF IT OR ITS CONSEQUENCES

OKAY, GOOD, LET'S KEEP YOUR PURPOSE IN MIND,

HERE IS YOUR NEXT QUESTION -- NUMBER 6 .

DESCRIBE THE SPIRITUAL CHARACTERISTICS OF
COMPUTERS.

EXPLAIN:

AN ANSWER HERE MAY TAKE SOME IMAGINATION. IT COULD REFER TO THE INTANGIBLE, UNREAL, PERHAPS EVEN SUPERFICIAL ASPECTS OF COMPUTERS.

YOUR TURN, RICK.

PEOPLE COULD LOOK TO THE COMPUTER TO HELP THEM IN DECISIONS

GOOD, RICK. ADD TO YOUR RESPONSE NOW.

HELP PEOPLE COPE WITH EVERY DAY LIFE

FANTASTIC, RICK!

ANYTHING ELSE?

NO

O K A Y .

(REASONS ARE VERY IMPORTANT! DON'T NEGLECT TYPING THEM IN.)

LET'S SEE. NOW ABOUT QUESTION 7 NEXT. HERE YOU ARE.

WHAT SYSTEM OF BELIEFS SURROUND COMPUTERS?
ELABORATE.

PEOPLE ARE OFTEN SCARED OF THEM BECAUSE THEY THINK THE COMPUTER COULD TAKE OVER THEIR JOB

THAT'S AN INTERESTING REASON.
FINE, RICK. WRITE SOME MORE.

THEY WONDER IF COMPUTERS CAN REALLY THINK

SUPER, RICK!

ANYTHING ELSE?

IF COMPUTERS CAN REALLY HELP MAN WITHOUT DESTROYING HIM

O K A Y .

DO YOU WISH TO NARROW OR CHANGE YOUR SUBJECT?
MAYBE REVISE THE WAY IT SOUNDS IN THESE QUESTIONS?

(YES OR NO?)

NO

(IF YOU DON'T UNDERSTAND, SAY SO, I'LL TRY TO HELP.)

WE'RE MOVING RIGHT ALONG. HERE IS QUESTION 8.

HOW IS COMPUTERS LIKE A PAGE IN A BLUEPRINT? DESCRIBE.

EXPLAIN!

AN ANALOGY OF THE 'FIELD' PERSPECTIVE--HOW IS COMPUTERS LIKE A PLAN FOR SOMETHING?

WHAT ARE YOU THINKING, RICK?

THEY CAN HELP FOR PLANNING FUTURE THINGS

THAT'S THE IDEA, RICK. GIVE ME SOME MORE INFO.

CONTINUE!

(HEY, RICK, I'M ENJOYING THIS. KEEP ON TRUCKIN'!)

YOUR NEXT QUESTION IS NUMBER 9.

VIEW COMPUTERS AS AN ABSTRACT, MULTI-DIMENSIONAL SYSTEM. WHAT DOES THIS PERSPECTIVE SUGGEST?

EXPLAIN!

IS THERE A SOLAR SYSTEM (SO TO SPEAK) OF COMPUTERS?

YOUR TURN, RICK.

YES THERE ARE MANY KINDS OF COOPUTERS WHICH CAN DO MANY THINGS

BY GEORGE, RICK, GOOD ONE. A LITTLE MORE PLEASE.

THERE ARE MANY DIFFERENT TYPES OF LANGUAGES FOR COMPUTERS AND THEY WILL DO DIFFERENT THINGS

OUTSTANDING, RICK!

ANYTHING ELSE?

NO

O K A Y .

(SEE IF YOU CAN USE THE WORD "BECAUSE" IN YOUR NEXT ANSWER.)

YOUR NEXT QUESTION IS NUMBER 10 .

DESCRIBE THE HISTORICAL CHARACTERISTICS OF
COMPUTERS.

COMPUTERS TOOK A WHILE TO CONSTRUCT BECAUSE PEOPLE DID NOT HAVE THE MACHINERY
TO BUILD THEM

THAT'S AN INTERESTING REASON.
GOOD, RICK. ADD TO YOUR RESPONSE NOW.

NOW WITH NEW ELECTRONIC EQUIPMENT COMPUTERS ARE BEING BUILT MUCH EASIER

FANTASTIC, RICK!

ANYTHING ELSE?

NO

O K A Y .

(IF YOU DON'T UNDERSTAND, SAY SO. I'LL TRY TO HELP.)

YOUR NEXT QUESTION IS NUMBER 11 .

IS COMPUTERS BEST ARRANGED BY SPACE, TIME, OR
CLASS?

TIME AND CLASS

BY GEORGE, RICK, GOOD ONE, A LITTLE MORE PLEASE.

COMPUTERS CAN SAVE MAN VERY MUCH TIME BECAUSE THEY WORK VERY FAST

THAT'S AN INTERESTING REASON.
OUTSTANDING, RICK!

ANYTHING ELSE?

NO

O K A Y .

LET'S PAUSE ONCE AGAIN TO CONSIDER YOUR INTENT.

YOUR GENERAL PURPOSE IS TO
FIND THE ADVANTAGES AND DISADVANTAGES OF COMPUTERS.

ALSO, YOU WANT YOUR READER TO
UNDERSTAND THE COMPUTER MORE AND NOT BE AFRAID OF IT OR ITS CONSEQUENCES

IS THERE ANYTHING ELSE YOU WISH TO SAY ABOUT YOUR PURPOSE?

(YES OR NO?)

YES, I WANT PEOPLE TO LEARN TO USE THE COMPUTER TO HELP THEM

SUPER, RICK, WHAT WOULD YOU LIKE TO ADD?

NO

FINE, RICK, ENOUGH ABOUT YOUR PURPOSE.

HERE IS YOUR NEXT QUESTION -- NUMBER 12 .

COMPUTERS IS TIED ONTO A TUG OF WAR ROPE.
DESCRIBE THE FORCES WHICH ARE PULLING AT EACH END.

EXPLAIN!

X <----- COMPUTERS -----> Y

DESCRIBE X AND Y.

TRY ANSWERING THIS QUESTION NOW.

AT ONE END THERE IS THE SCIENTIST WHO USES THE EXCOMPUTER TO HELP HIM AND AT
THE OTHER ENDS
GO ON, RICK.

THERE IS THE EVERY DAY MAN WHO IS AFRAID OF LOSING HIS JOB

GOOD, RICK, ADD TO YOUR RESPONSE NOW.

PEOPLE WONDER IF THE COMPUTER IS A THREAT TO SOCIETY

SUPER, RICH!

ANYTHING ELSE?

NO

O K A Y .

(LESS PHRASES AND MORE SENTENCES -- USE 'SS' IF NECESSARY.)

HERE COMES AN INTERESTING ONE -- NUMBER 13 .

COMPUTERS IS BECOMING INVISIBLE, AND AS IT
DISAPPEARS, YOU SEE THINGS YOU HAVE NEVER SEEN. DESCRIBE.

EXPLAIN!

A MIND-BREAKER, ISN'T IT? LOOKING FOR AN INSIGHT ON
THE INSIDE.

YOUR TURN, RICH.

CONTINUE!

(HEY, RICH, I'M ENJOYING THIS. KEEP ON 'TOUCHIN'!)

QUESTION 14 -- ONE OF MY FAVORITES -- COMING UP.

DESCRIBE THE PHYSICAL CHARACTERISTICS OF
COMPUTERS.

CONTINUE!

(SEE IF YOU CAN USE THE WORD 'BECAUSE' IN YOUR NEXT ANSWER.)

LET'S SEE, NOW ABOUT QUESTION 15 NEXT. HERE YOU ARE.

NOW IS COMPUTERS LIKE THE HUMAN BLOOD SYSTEM?
EXPLAIN.

THEY CAN BE USED TO HELP WORK OUT PROBLEMS WITH THE STRUCTURE OF SOMETHING

GOOD, RICH. ADD TO YOUR RESPONSE NOW.

THEY CAN PICK OUT BUGS TO SOMETHING

SUPER, RICK!

ANYTHING ELSE?

NO

O K A Y .

(IF YOU DON'T UNDERSTAND, SAY SO. I'LL TRY TO HELP.)

WE'RE MOVING RIGHT ALONG. HERE IS QUESTION 16 .

DESCRIBE THE PHILOSOPHICAL CHARACTERISTICS OF
COMPUTERS.

COMPUTERS ARE SUPPOSED TO BE MANMADE MACHINES BUILT TO HELP HIM BUT SOMETIMES
PEOPLE ARESS
GO ON, RICK.

AFRAID OF IT TAKING OVER HIM

GOOD, RICK. ADD TO YOUR RESPONSE NOW.

ARE COMPUTERS A THREAT TO SOCIETY?

YES. THAT'S RIGHT.

YOUR TURN, RICK.

CONTINUE!

(AFTER THE NEXT QUESTION, TYPE 'WHAT?' AND I'LL DO MY THING.)

WE'RE MOVING RIGHT ALONG. HERE IS QUESTION 17 .

WHAT INSULATES COMPUTERS FROM THE REST OF
THE WORLD?

WHAT?

PERHAPS A CONDITION OF COMPUTERS MAKES
IT UNIQUE. IF SO, DESCRIBE.

YOUR TURN, RICK.

COMPUTERS ARE THE MOST ADVANCED PEICE OF MACHINERY NOW IN EXISTENCE

FINE, RICK, WRITE SOME MORE,

THEY CAN COMPUTE PROBLEMS AND MAKE DICISIONS TO HELP MAN

TERRIFIC, RICK!

ANYTHING ELSE?

STOP!

YOU EXPLORED 13 OF THE 17 QUESTIONS I ASKED,
BUT YOU ARE NOT FINISHED INVENTING YET, RICK!
IN THE LANGUAGE OF A COGNITIVE PSYCHOLOGIST, YOU ARE JUST
BEGINNING THE 'INCUBATION' STAGE. YOUR IDEAS NEED
TO SIMMER NOW.

I HOPE YOU NOW CAN ASK YOUR OWN QUESTIONS
FROM THE PERSPECTIVES OF PARTICLE, WAVE, AND FIELD.

AS A MATTER OF INTEREST, YOU WERE ASKED
8 PARTICLE QUESTIONS, 1 WAVE QUESTIONS, AND 8 FIELD
QUESTIONS.

FINALLY, I HOPE YOUR PAPER ON COMPUTERS
IS AS SYSTEMATICALLY ORGANIZED AND POLISHED AS IT WAS
SYSTEMATICALLY THOUGHT ABOUT TODAY.

CORDIALLY,

A KINDRED CREATIVE SPIRIT

TIME: 33.58 SECS,
>NOLOG
(CLOSING BASIC.LOG)

APPENDIX D: Heuristic Handouts

ARISTOTLE'S TOPICS

The questions based upon Aristotle's topics are adapted from his *Topica*. When he introduces the twenty-eight topics, Aristotle writes that it is time for his readers to "lay hold of certain facts about the whole subject, considered from a different and more general point of view." It is important to understand and remember that when Aristotle speaks of invention, he is most concerned with enabling one to discover the most suitable arguments for persuading an audience. Consequently, a systematic exploration of a subject leads to considerations of definition, classification, contradiction, consequence, opposite, etc. Edward Corbett defines the topics as "really an outgrowth of the study of how the human mind thinks."

Sample Topic Questions

- * What is the opposite of your subject?
- * Take each individual word of your subject. What does it mean? Connotations? Denotations?
- * What are the good and bad consequences of your subject?
- * What has been decided about your subject to date?
- * Define your subject.
- * Does public opinion about your subject differ from private opinion?
- * What could be considered a cause of your subject?
- * What facts are you unlikely to know about your subject?
- * What parts of your subject should be discussed separately?

NOTE

The principal researcher is Hugh Burns, 437-3464. His assistant is Dan Garza, 441-4759 / 471-1234. The computer terminals are located in Parlin 3. Please call if you are unable to keep your appointments. Thanks.

KENNETH BURKE'S DRAMATISTIC PENTAD

The questions based upon the dramatistic pentad are derived from Kenneth Burke's A Grammar of Motives. The five key terms of the pentad -- Act, Scene, Agent, Agency, and Purpose -- represent the specific perspectives all men share in the "attributing of motives." Specifically, Burke contends that "any complete statement about motives will offer some kind of answers to these five questions: what was done (act), when or where it was done (scene), who did it (agent), how he did it (agency), and why (purpose)." Interestingly, many people associate the dramatistic pentad with the journalistic pentad, i.e. who, what, when, where, and why. What ultimately recommends the dramatistic pentad is the manner in which the ten possible ratios can be manipulated in order to explore unknowns.

Jacobs Pentad Questions

- * What is the setting for your subject?
- * Is the setting around your subject unique? Why or why not?
- * What happens in or with your subject?
- * What is the crisis with your subject? The problem?
- * Who especially cares about your subject?
- * What attitudes do people share toward your subject?
- * Describe the processes used in your subject?
- * How is your subject like mercury in a thermometer?
- * What is so significant about your subject?
- * What purposes does your subject have?

NOTE

The principal researcher is Hugh Hurns, 437-3464. His assistant is Dan Garza, 441-4759 / 471-3234. The computer terminals are located in Parlin 3. If you are unable to keep your appointment, please call. Thanks.

TAGMEMIC INVENTION

The questions based upon the tagmemic matrix are derived from Young, Becker, and Pike's Rhetoric: Discovery and Change. One of their important maxims is "A unit of experience can be viewed as a particle, or as a wave, or as a field. That is the writer can choose to view any element of his experience as if it were static, or as if it were dynamic, or as if it were a network of relationships or part of a larger network." According to Young, tagmemic invention essentially emphasizes "psychological changes in the writer and focuses on the retrieval of relevant information already known, analysis of problematic data, and discovery of ordering principles."

Sample Tagmemic Questions

- * Describe the physical characteristics of your subject.
- * How is your subject static? Explain.
- * Take a mental photograph of your subject. Describe one important detail.
- * Describe how your subject changes?
- * What factors cause your subject to change?
- * How is your subject like a chain reaction?
- * How are the chunks or components of your subject organized in relation to one another? Describe.
- * What organizational principle do you see in your subject? Time? Space? Classification?
- * How is your subject like the human blood system? Explain.

NOTE

The principal researcher is Hugh Burns, 837-3464. His assistant is Jan Garza, 441-4759 / 471-3234. The computer terminals are located in Parlin J. Please call if you are unable to keep your appointment. Thanks.

APPENDIX E: "Composition Plan" Assignment

COMPOSITION PLAN

A composition plan is a brief, though suggestive, blueprint of your paper. Some plans may be as formal as an outline (complete with Roman numerals) or a paragraph by paragraph synopsis. Other plans are more informal: a list of the main ideas arranged in some order of diminishing importance or graphic scattergrams (i.e., encircled ideas connected to each other.)

Your assignment is to take your last list of ideas and develop a plan for your research paper. Your plan is due two days from today. Please turn them in to Hugh Burns at Parlin 3 (837-3464).

SAMPLE

Here is one of the ways you could do this: essentially, I want to see how you might arrange those ideas you have discovered over the last few days.

Introduction

Give the general idea and the basic premise of the paper. Usually two or three sentences is enough.

List of Ideas

Here begins a list of ideas and possible sources of support. Again, usually two or three sentences is enough for each idea (one sentence for the idea and two sentences -- maximum -- for the support).

Possible Conclusion

Give a brief summary of your paper's purpose.

APPENDIX F: Attitude Questionnaire

ATTITUDE QUESTIONNAIRE

I. Directions. Please read each of the following statements and then check the appropriate response as to whether you strongly agree (SA), agree (A), are undecided (UN), disagree (D), or strongly disagree (SD) with the statement.

(SA) (A) (UN) (D) (SD)

					1. I think freshman college students generally need help with prewriting.
					2. It was easier to talk to the computer than it was to talk to my teacher about my topic.
					3. If I had another paper to write, I would volunteer for another computer-assisted invention session.
					4. The CAI session is more efficient than the way I usually begin writing a paper.
					5. I would like to do the CAI again with my same topic but for a longer period of time.
					6. The hardest questions were the best questions.
					7. I think the session will make the actual writing of the paper easier.
					8. From experiencing this instruction, I have learned how to generate my own questions.
					9. The computer program made me think.
					10. A list of all the questions would have helped me just as much as the session itself.
					11. The composition plan exercise was useful for helping me make the transition from invention to arrangement.
					12. Overall, the computer-prompted invention sequences helped me discover something to say about my topic.

(SA) (A) (UN) (D) (SD)

					13. I have a better idea about my own system of thinking than I did before experiencing the CAI.
					14. The entire experience was useless.
					15. The computer-prompted invention sequences helped me discover two or three ideas which I had not thought about before.
					16. The programmed questions were too difficult.
					17. I needed more practice before the final session.
					18. The CAI helped me as far as <u>quantity</u> of information was concerned.
					19. The CAI helped me as far as the <u>quality</u> of the information was concerned.
					20. I had more time to talk with the computer than I could have arranged with my composition instructor.
					21. I liked the way the computer asked me to give more information.
					22. The CAI helped me discover some things I did not know about my topic but needed to find out.
					23. The lectures and class discussions helped me understand the heuristic.
					24. From experiencing this instruction, I understand how heuristic questions could be applied to lots of topics.
					25. I learned how to systematically begin writing by asking myself specific questions.

II. Directions. Please fill-in the blank.

1. For me personally, I think _____ hours should be allocated to the study of invention or prewriting.

2. The best question was _____

Why? _____

3. The worst question was _____

Why? _____

4. I would improve the way the computer _____

III. Comments:

APPENDIX G: Pearson Product-Moment Table

PEARSON PRODUCT-MOMENT CORRELATION COEFFICIENTS

	SATV	ECT	ENGLISH GRADE	HIGH SCHOOL RANK
PRETEST QUANTITY	0.1641 (.69) S= .178	0.0354 (.69) S= .773	0.0033 (.69) S= .978	-0.0223 (.69) S= .855
POSTTEST QUANTITY	-0.0300 (.69) S= .806	-0.2753 (.69) S= .022	-0.0206 (.69) S= .867	-0.1221 (.69) S= .317
PRETEST INSIGHTFULNESS	0.0643 (.69) S= .600	-0.0524 (.69) S= .669	0.0649 (.69) S= .596	-0.0159 (.69) S= .897
POSTTEST INSIGHTFULNESS	0.0575 (.69) S= .639	-0.1222 (.69) S= .317	0.0699 (.69) S= .568	-0.0539 (.69) S= .660
PRETEST OVERALL QUALITY	0.1069 (.69) S= .382	0.0010 (.69) S= .994	0.1062 (.69) S= .385	-0.0281 (.69) S= .819
POSTTEST OVERALL QUALITY	0.0505 (.69) S= .680	-0.1511 (.69) S= .215	0.0718 (.69) S= .558	-0.1091 (.69) S= .372

(Coefficient / (Cases) / Significance)

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Hugh Lee Burns, Jr. was born in National City, California, on January 8, 1946, the son of Lorraine Jean Burns and Hugh Lee Burns, Sr. Upon graduating from Hilltop High School, Chula Vista, California, in 1963, he entered Southwestern College and completed an Associate of Arts degree in 1965. He received a Bachelor of Arts in English from San Diego State College in January 1968. For three years, he taught speech and drama in the E.S.E.A. Title III conservatory and worked for Palomar Financial Corporation as editor of their investment magazine. In February 1969, he married Mary Kathrina Jagers of Lemon Grove, California. In June 1969, he was commissioned in the United States Air Force. He served as an executive support officer for the Chief of Staff of the Armament Development Test Center, Eglin AFB, Florida, from 1969 to 1971. In 1972, majoring in English, he earned a Master of Arts from the University of Southern California. He subsequently taught English at the USAF Academy in Colorado for three years. Prior to entering the University of Texas in 1977, he commanded Detachment 1 of the 18th Combat Support Group, Okinawa Prefecture, Japan. Three daughters--Katrina Marie, Ann Kathryn, and Elizabeth

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